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**ANALYSIS OF CASE-LEVEL FOOD STAMP PROGRAM
QUALITY CONTROL DATA**

A Special Topic Report of the
Food Stamp Error Prevention Study

Prepared by:

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ANALYSIS OF CASE-LEVEL FOOD STAMP PROGRAM QUALITY CONTROL DATA

EXECUTIVE SUMMARY

This report examines the kinds, sources, and causes of errors present in Food Stamp cases. The report also describes the kinds of households represented, investigates the relationship between household characteristics and error patterns, and attributes the dollars in error to various types of error. The report was prepared by SRI International under contract to the Food and Nutrition Service of the U.S. Department of Agriculture.

The report is based on data from the Food Stamp Program Quality Control (QC) system. These data result from semi-annual reviews of a random sample of individual Food Stamp Program household files. State QC reviewers investigate the actual circumstances of each sampled case, compare their findings to the information in the case file, and note any differences. Data on household characteristics, the source and type of errors in the case, and the total dollar amount in error are recorded for each case reviewed.

The report analyzes nearly 75,000 QC cases drawn from forty states plus the District of Columbia. This was the largest, most complete sample of QC cases available when the analyses were conducted. Most cases are from April 1981 through March 1982, the most recent period for which data were available for the bulk of the states. When data from that period were unavailable, data from October 1980 through September 1981 were used. Below we highlight the main findings of these analyses.

Error Patterns

- o Overall, about one-fourth of the cases contained an error. Many errors were minor and the dollar overpayment rate was 8.7 percent. The most prevalent kind of error was overissuance to eligibles (about 13 percent of cases), followed by underpayments to eligibles (about 7 percent) and payments to ineligibles (about 5 percent).

Error Patterns (continued)

- Among cases with errors, the average overpayment was about \$53, consisting of payments to eligibles (averaging about \$93) and overissuances to eligibles (about \$38). Underpayments averaged about \$33.
- Mistakes related to the amount of the household's earned income were the largest source of first errors* (about one-third of cases), followed by mistakes related to unearned income (about 24 percent) and deductions (about 20 percent).
- The majority of first errors (about 58 percent of cases) were client-caused, due largely to failure to report information. About 42 percent were agency-caused, due largely to failure to take action on reported information.
- Public Assistance (PA) and Nonpublic Assistance (NPA) cases had different error patterns. Compared to NPA cases, PA cases:
 - contained slightly fewer overpayment errors (16.0 percent vs. 18.5 percent) but marginally more underpayment errors (7.8 percent vs. 7.0 percent);
 - involved somewhat larger average overpayment amounts (\$57.31 vs. \$50.58), although there was no difference in underpayment amounts;
 - were less likely to contain errors related to income or resources (56 percent of first errors vs. 71 percent), but more likely to contain errors related to deductions and household size (40 percent vs. 26 percent); and
 - were more likely to involve agency-caused errors (48 percent vs. 38 percent).

Household and Case Characteristics

- Sample households averaged about 2.8 persons; about half had white heads of household, about 38 percent were black, and 9 percent were Hispanic. About one in five households had earned income, about 46 percent received public assistance or general assistance, 27 percent received social security or pensions, and about one-fourth reported liquid assets.

* A case may contain several errors (for example, the client underreported income and the caseworker also miscalculated the shelter deduction). The report analyzed the first error recorded for each case for two reasons: (i) they are almost always the most important and (ii) the appropriate weight for subsequent errors is unclear because the dollar amount of error is not partitioned among multiple error sources by QC reviewers.

** Although small, these differences--like the others reported here--are statistically significant.

Household and Case Characteristics (continued)

- o The average Food Stamp allotment was about \$107. The average certification period was seven months. About 5 percent of the sample cases received expedited services in the review period.
- o PA households were larger, less likely to earn income or receive Social Security benefits, and more likely to have a nonwhite head of household than NPA households. PA households received larger allotments (due to larger household size and lower income) and slightly longer certification periods than NPA households, but were less likely to receive expedited services.

Relating Household and Case Characteristics to Errors

Household and case characteristics explained only a small portion of errors. The study analyzed the combined explanatory effect of household and case characteristics on several measures of error, including both the dollar amount and incidence of overpayment, underpayment and total errors. When combined, household and case characteristics never explained more than 9 percent of the variance of errors among individuals and usually explained only 3 percent of the variance.*

- o Although the combined explanatory power of household and case characteristics was quite weak, some characteristics nonetheless show a statistically significant relationship to error. These are described below.
 - Households with more members had more overpayments and underpayments than households with fewer members.
 - Households with a nonwhite head had more underpayments and more overissuances to eligibles than households with a white head (but there was little difference between whites and nonwhites in payments to ineligibles).
 - For all types of income except Supplemental Security Income, households with income had more overpayments and underpayments, than did households without income.

*The reader should not confuse variance with the "variances" reported by QC reviewers. We use variance in its statistical sense here. For the nontechnical reader, variance is a measure of the degree to which individual scores on a variable are spread around the average score.

Relating Household and Case Characteristics to Errors (continued)

- o Characteristics that were related to the amount of overpayments were often related to the amount of underpayments. Thus, these characteristics appear to be indicators of a general tendency toward error, and overpayments to a group of people are partially offset by underpayments to people in the same group.
- o Most characteristics were related to the amount of error and the incidence of error in a similar manner. Likewise, characteristics associated with overissuances to eligibles were usually associated with payments to ineligibles in the same direction. The only meaningful exception was in connection with household size: households with more members had higher payments to ineligibles but smaller overissuances to eligibles than households with fewer members.
- o The average amount of error was substantially higher several months after certification or recertification than at the time of, or in the first month after, re/certification. The average error amount was higher when the most recent action was initial certification rather than recertification.
- o These characteristics usually had a similar relationship to errors for both PA and NPA cases. The magnitude of the impact on errors of having earnings was substantially greater for PA cases than for NPA cases.

Attributing Dollar Error to Sources of Error

Under the QC system, reviewers only determine the total amount of error in a case. They do not apportion the dollar amount among the various types of error that may be present in a case. The report develops a regression-based analytical technique for attributing dollar error to sources of error. The application of this technique to the QC database results in the findings below.

- o Errors in earned income were even more important in accounting for dollar error than their simple frequency would suggest. Earned income errors accounted for 22 percent of PA errors and 26 percent of NPA errors, but the size of the errors meant that earned income errors accounted for 39 percent and 44 percent of the cost of PA and NPA errors, respectively.
- o Over 70 percent of the dollar value of overpayments were attributable to client-caused errors. Approximately one-third of dollar overpayments were attributable to client-caused earned income errors.
- o Errors that occurred after the most recent certification (that is, errors due to an unreported change in client circumstances) were larger than those that occurred at the most recent certification (for example, due to incorrectly reported client circumstances).

Conclusion

This picture of the patterns of error, household characteristics, and the relationship among them should strengthen efforts to control errors in the Food Stamp Program. As findings are discussed by policymakers and program managers, implications for error control techniques should emerge. Understanding the substantial differences in the dollar value attributable to different sources of error should enable state and local officials to concentrate on identifying ways to reduce the most costly types of errors in the Food Stamp Program.

Table of Contents

I	Introduction	I-1
	Quality Control Data	I-2
	Samples Used in This Analysis	I-6
II	Eligibility and Payment Errors in Active QC Review Cases	II-1
	Error Characteristics of Active QC Review Cases	II-1
	Error Characteristics of PA and NPA Cases	II-7
III	FSP Household and Participation Characteristics	III-1
	Characteristics of the Study Sample	III-1
	Participation Characteristics of FSP Households	III-3
	Characteristics of PA and NPA Cases	III-5
IV	The Relationship Between Household Characteristics and Errors	IV-1
	The Model	IV-1
	Results	IV-6
V	Dollar Value by Source, Cause, and Timing of Errors	V-1
	Statistical Models to Estimate the Dollar Amount of Error by Type	V-2
	Sources of Error	V-5
	Cause of Error	V-8
	Source of Error by Cause of Error	V-10
	Timing of Error	V-14
	Summary and Conclusions	V-19
VI	Summary	VI-1
	Error Patterns	VI-1
	Household Characteristics	VI-2
	Relating Household Characteristics to Errors	VI-2
	Attributing Dollar Error to Sources of Error	VI-3
Appendix A	Comparison of Estimates of the Linear Probability Model and the Logistic Model	A-1
Appendix B	Estimated Standard Errors for Models of the Relationship Between Case Characteristics and the Amount and Incidence of Error	B-1
Appendix C	Estimated Impacts of First and Subsequent Errors on Dollar Errors	C-1

LIST OF TABLES

Table I-1	NUMBER OF COMPLETED QC REVIEWS OF ACTIVE CASES IN EACH 6-MONTH SEGMENT IN OUR ANALYSIS PERIOD IN EACH STATE IN THE SAMPLE	I-7
Table II-1	PERCENTAGE OF CASES IN ERROR BY ERROR CATEGORY . .	II-2
Table II-2	MEAN DOLLAR VALUE OF ERRORS AMONG ERROR CASES BY ERROR CATEGORY	II-4
Table II-3	MEAN PERCENTAGE OF FOOD STAMP ALLOTMENT PAID IN ERROR BY ERROR CATEGORY	II-5
Table II-4	PERCENTAGE OF CASES IN ERROR BY SOURCE, CAUSE, AND TIMING OF FIRST ERRORS	II-6
Table II-5	PERCENTAGE OF PA AND NPA CASES IN ERROR BY ERROR CATEGORY	II-8
Table II-6	MEAN DOLLARS IN ERROR AMONG PA AND NPA ERROR CASES BY ERROR CATEGORY	II-9
Table II-7	MEAN PERCENTAGE OF FOOD STAMP ALLOTMENT PAID IN ERROR TO PA AND NPA CASES BY ERROR CATEGORY . .	II-10
Table II-8	PERCENTAGE OF ERROR CASES BY SOURCE, CAUSE, AND TIMING OF FIRST ERRORS IN NPA AND PA CASES . . .	II-12
Table III-1	HOUSEHOLD CHARACTERISTICS OF ACTIVE QC REVIEW CASES	III-2
Table III-2	FOOD STAMP PARTICIPATION CHARACTERISTICS	III-4
Table III-3	HOUSEHOLD CHARACTERISTICS OF PA AND NPA CASES . .	III-6
Table III-4	FOOD STAMP PARTICIPATION CHARACTERISTICS FOR PA AND NPA CASES	III-8
Table IV-1	ESTIMATED IMPACT OF CASE CHARACTERISTICS ON AMOUNT OF UNDERPAYMENT ERROR, OVERPAYMENT ERROR AND TOTAL ERROR FOR NPA AND PA CASES	IV-7
Table IV-2	IMPACT OF CASE CHARACTERISTICS ON AMOUNT OF OVERPAYMENT ERROR TO ELIGIBLES, INELIGIBLES AND OVERALL FOR NPA AND PA CASES	IV-9

LIST OF TABLES (concluded)

Table IV-3	ESTIMATED IMPACT OF CASE CHARACTERISTICS ON THE INCIDENCE OF OVERPAYMENT ERRORS, UNDERPAYMENT ERRORS, AND ALL ERRORS FOR NPA AND PA CASES	IV-11
Table IV-4	IMPACT OF CASE CHARACTERISTICS ON THE INCIDENCE OF OVERPAYMENT ERRORS TO ELIGIBLES, INELIGIBLES, AND OVERALL FOR PA AND NPA CASES	IV-13
Table V-1	ESTIMATED IMPACT OF FIRST AND SUBSEQUENT ERRORS ON TOTAL ERROR BY SOURCE OF ERROR--NPA CASES	V-4
Table V-2	ESTIMATED AMOUNT OF OVERPAYMENT ERROR ATTRIBUTABLE TO VARIOUS SOURCES OF ERROR	V-6
Table V-3	ESTIMATED AMOUNT OF TOTAL ERROR ATTRIBUTABLE TO VARIOUS SOURCES OF ERROR	V-7
Table V-4	ESTIMATED AMOUNT OF OVERPAYMENT ERROR ATTRIBUTABLE TO VARIOUS CAUSES OF ERROR	V-9
Table V-5	ESTIMATED AMOUNT OF TOTAL ERROR ATTRIBUTABLE TO VARIOUS CAUSES OF ERROR	V-11
Table V-6	ESTIMATED AMOUNT OF OVERPAYMENT ERROR ATTRIBUTABLE TO VARIOUS SOURCES OF ERROR BY CAUSE OF ERROR--NPA CASES	V-12
Table V-7	ESTIMATED AMOUNT OF OVERPAYMENT ERROR ATTRIBUTABLE TO VARIOUS SOURCES OF ERROR BY CAUSE OF ERROR--PA CASES	V-13
Table V-8	ESTIMATED AMOUNT OF TOTAL ERROR ATTRIBUTABLE TO VARIOUS SOURCES OF ERROR BY CAUSE OF ERROR--NPA CASES	V-15
Table V-9	ESTIMATED AMOUNT OF TOTAL ERROR ATTRIBUTABLE TO VARIOUS SOURCES OF ERROR BY CAUSE OF ERROR--PA CASES	V-16
Table V-10	ESTIMATED AMOUNT OF OVERPAYMENT ERROR ATTRIBUTABLE TO BEFORE AND AFTER MOST RECENT CERTIFICATION . . .	V-17
Table V-11	ESTIMATED AMOUNT OF TOTAL ERROR ATTRIBUTABLE TO BEFORE AND AFTER MOST RECENT CERTIFICATION . . .	V-18

I INTRODUCTION

The Food and Nutrition Service (FNS) of the U.S. Department of Agriculture (USDA) has contracted with SRI International to conduct an evaluation of methods to prevent certification and recertification errors in the Food Stamp Program (FSP). A key activity in this study has involved surveys of directors, "key respondents," supervisors, and eligibility workers from a sample of approximately 900 local welfare offices in 38 states. They have been asked to report on policies and procedures related to the FSP, characteristics of office organization and management, the nature and extent of staff training, and their own attitudes and backgrounds. These data will be related statistically to error rates from these offices to identify activities or office or staff characteristics that are effective in controlling FSP certification and recertification errors.

The dependent variables for this study, local office error rates, are based on data produced from the FSP quality control (QC) system. These data result from state QC reviews of a random sample of individual FSP household files. Data on household characteristics, the source and type of errors in the case, and the dollar amount of error are recorded for each case reviewed. From these individual cases we will construct aggregate variables for each office.

However, before these individual case data are transformed into aggregate office-level variables, it is useful to understand how they operate at the individual level. The results of our analyses of individual QC review cases are reported here.

More specifically, we have examined four questions:

- . What are the kinds, sources, and levels of error identified among these QC review cases?

- . What kinds of households are represented by these QC review cases and how do they compare to a broader Food Stamp population?
- . How do household characteristics relate to FSP errors; are some kinds of households more often associated with errors, or larger errors, than other kinds of households?
- . What kinds of errors lead to larger dollar errors?

Each of these questions is addressed in order in the following four sections. Before reporting these results, however, we describe the QC data and the samples used.

Quality Control Data

The QC review data are derived from the quality control review data sheet (FNS Form 245)*, presented in Exhibit I-1. This form is completed for each case selected for quality control review. These cases result from drawing independent random samples from the FSP caseload in each state; separate samples are drawn from active and negative cases. The sample size in each state varies with the size of the caseload with a minimum of 300 and a maximum of 2,400 each year for active cases and a minimum of 300 and a maximum of 1,600 for negative cases. FNS has provided these data to SRI in the form of data files which contain virtually all the information presented on Form 245. However, data have been partially recoded. For example, incomes and assets have been converted from continuous numbers to categories.

The individual case QC data file provided to SRI contains six different components. Records are available for completed reviews of both active and negative cases (cases that were terminated or whose applications were denied).

*This form replaced a similar earlier form in early 1981. Data elements are almost identical, however.

Active case records contain data on household incomes, assets, and characteristics, Food Stamp allotment, whether an error exists, the type of error (overissuance, underissuance, payment to ineligible), the amount of the error, and a description of the first error listed on Form 245. Negative case records contain no household income or asset information but do contain information about whether an error is present and a description of the first variance identified on Form 245. There are also components of the data file that describe each variance identified on Form 245 for completed reviews of both active and negative cases, demographic characteristics and income sources for each individual listed on Form 245 for active cases with completed reviews, and each administrative deficiency identified for completed reviews of both active and negative cases. The data used in the analyses reported here involve only case-level data from active QC review cases.

Samples Used in This Analysis

The QC data are available for all states except New Hampshire for the period from October 1979 to September 1982. However, not all states have data for all 6 month review periods within that time span. This analysis is based on the data for the period from April 1981 to March 1982 because that is the most recent year for which data are available for the bulk of the states. Where data are unavailable for this period, data from October 1980 through September 1981 are used. Forty-one states have data available for one of these 12-month time periods. Table I-1 presents the number of completed reviews of active cases in each state in the sample for each 6-month period in our 12-month study time frame. The columns underlined indicate the QC data used in the total sample analysis in this report.

Our descriptive analysis (Sections II and III) presents error and household characteristics for all cases in these 41 states, which comprise the broadest sample available with reasonably recent QC data. We also present similar descriptive statistics for the subsample of cases from the 900 areas in the 38 states that agreed to participate in our survey (this

Table I-1

NUMBER OF COMPLETED QC REVIEWS OF ACTIVE CASES IN EACH 6-MONTH SEGMENT
IN OUR ANALYSIS PERIOD IN EACH STATE IN THE SAMPLE

<u>State</u>	<u>10/80- 3/81</u>	<u>4/81- 9/81</u>	<u>10/81- 3/82</u>
Alabama	1,209	1,184	1,239
Arizona	1,060	1,162	1,158
Arkansas	1,216	1,237	1,283
California	1,122	1,221	1,270
Colorado	923	947	0
Connecticut	1,223	1,189	1,115
Delaware	421	388	389
Dist. of Columbia	709	723	0
Florida	1,220	1,208	0
Georgia	1,246	1,243	1,239
Hawaii	794	730	389
Illinois*	1,439	1,378	1,347
Iowa	0	1,148	0
Kansas	0	932	920
Kentucky	1,358	1,178	1,146
Louisiana	1,243	834	796
Maine	1,149	1,081	1,044
Maryland	1,221	1,200	1,167
Massachusetts*	0	956	401
Michigan*	1,153	1,135	1,130
Minnesota	1,174	1,071	1,112
Mississippi	1,197	955	1,186
Montana	313	296	310
Nebraska	511	513	523
Nevada	289	265	249
New Jersey	1,242	1,175	1,115
New Mexico	1,170	1,090	984
New York	1,163	1,022	1,202
North Carolina	1,242	943	1,141
North Dakota	149	131	0
Ohio	1,291	1,226	0

Table I-1 (Concluded)

<u>State</u>	<u>10/80- 3/81</u>	<u>4/81- 9/81</u>	<u>10/81- 3/82</u>
Pennsylvania	1,208	1,202	841
Rhode Island	686	721	683
South Carolina	0	897	879
South Dakota	291	273	0
Texas	1,185	1,146	1,141
Utah	390	401	423
Virginia	1,232	1,226	1,195
Washington	1,202	1,309	0
Wisconsin	1,353	1,373	1,374
Wyoming	165	157	25
TOTAL	38,809	38,942	30,525

* States included among the 41 states for which QC data are available, but not among the 38 states in the study sample because they chose not to participate in the study's surveys.

will be the sample used in later project analyses). Similarities in the two samples increase our confidence that our study sample is representative of food stamp cases more broadly. Further regression analyses, reported in Sections IV and V are based on the larger sample in 41 states.

The findings of our analysis of household-level QC data are discussed in the following sections.

II ELIGIBILITY AND PAYMENT ERRORS IN ACTIVE QC REVIEW CASES

In this section we describe the error characteristics of active QC review cases. We examine the incidence of different kinds of errors, the dollar value of these errors, and the average percentage of the Food Stamp allotments that are paid in error for the study sample and the total sample.* Similarities in the two samples indicate that the study sample is a representative subset of the universe of FSP review cases. In addition, we distinguish errors in public assistance and general assistance (PA) cases** from nonpublic assistance (NPA) cases, because of the different regulatory and administrative constraints under which they operate.

Error Characteristics of Active QC Review Cases

When we compare errors in the study sample, based on data from about 900 areas in 38 states, with those in the total sample, based on all areas in 41 states, we find no important differences between the types and sizes of errors in the two samples. Table II-1 shows that the percentages of cases with different kinds of payment errors (payment to eligibles, overissuance to eligibles, etc.) are very similar in the two samples. About one-fourth of the study sample cases and 24.6% of the total sample cases have some kind of error, and 17.5% and 17.3%, respectively, involve overpayments. Cases with overissuances to eligibles (12.7% and 12.5%) exceed cases with underpayment errors (7.4% and 7.3%).

*The study sample is cases from 900 local areas in 38 states that will be used in later project analyses. The total sample is all cases in the 41 states that have QC data for our study period.

**The QC data base does not distinguish PA and GA cases. In this report, PA will refer to cases that receive either PA or GA.

Table II-1
PERCENTAGE OF CASES IN ERROR BY ERROR CATEGORY

Error Category	Study Sample (N=53,923)	Total Sample (N=74,797)
Payments to eligibles	4.8% ⁺	4.8%
Overissuances to eligibles	12.7	12.5
Total overpayments*	17.5	17.3
Underpayments to eligibles	7.4	7.3
Total errors	24.9	24.6

⁺I.e., in 4.8% of the study sample cases, payments were made to eligibles.

*Sum of payments to eligibles and overissuances to eligibles.

Table II-2 presents the mean dollar value of errors among error cases in the two samples, by error category. The largest difference between the two samples is only \$0.86, about 2% of the dollar values. For both samples, the largest dollar errors are associated with payments to ineligibles (a mean error of approximately \$93). The mean dollar error of all error cases--both overpayments and underpayments--is about \$47 for both samples. Underpayments (about \$33) are almost equal in amount to overissuances to eligibles (about \$38).

The mean percentage of the Food Stamp allotments paid in error for the two samples are presented in Table II-3. The largest difference between the two samples here is less than one percentage point for underpayment errors. The dollar value of overissuances to eligible households averages about one-third of the allotments to those households. Underpayment errors are more substantial. Dollars that should have been paid to eligible households but were not average about 56% of allotments to those households. In other words, the average household subject to underpayment errors received less than half of the benefits to which it was entitled.

Table II-4 shows the distribution of errors in each of the two samples by source, cause, and timing. This table describes the first error listed for the case on the QC review form; in almost all states, the first error is the primary error which contributes most to the total dollar error in the case. Again, the samples are very similar to one another. The greatest difference is in the percentage of error cases in which the first error is client-caused: 59.4% for the study sample, compared to 57.5% for the total sample. The most common source of the first error is earned income (about one-third of cases in both samples), followed by unearned income errors. The majority of errors (about 58%) are designated as client-caused and are most likely to result from unreported information (just under 40% in both samples). Not surprisingly, the majority of errors (about 59%) occur at or before recertification; once a case has undergone one or more recertifications, fewer errors are found.

Table II-2

MEAN DOLLAR VALUE OF ERRORS AMONG ERROR CASES BY ERROR CATEGORY

<u>Error Category</u>	<u>Study Sample</u>	<u>Total Sample</u>
	<u>Amount</u>	<u>N</u>
Payment to eligibles	\$93.21+	2,602
Overissuances to eligibles	\$37.85	6,833
Total overpayments*	\$53.84	9,435
Underpayment to eligibles	\$33.69	3,976
Total errors	\$47.86	13,411
	\$47.38	18,424

⁺I.e., in the study sample, the mean amount paid in error to eligibles was \$93.21.

*Sum of payments to eligibles and overissuances to eligibles.

Table II-3
MEAN PERCENTAGE OF FOOD STAMP ALLOTMENT
PAID IN ERROR BY ERROR CATEGORY

Error Category	Study Sample		Total Sample	
	Amount	N	Amount	N
Payments to eligibles	100.0% ⁺	2,602	100.0%	3,605
Overissuances to eligibles	33.4	6,833	33.3	9,334
Total overpayments*	51.8	9,435	51.9	12,939
Underpayments to eligibles	56.6	3,976	55.8	5,485
Total errors	53.2	13,411	53.0	18,424

⁺I.e., 100% of the dollar value of the allotments to eligibles was in error. (Ineligibles, by definition, should receive \$0, so all of their allotment is in error.) One-third of the dollar value of overpayments to eligibles was in error.

*Sum of payments to eligibles and overissuances to eligibles.

Table II-4
PERCENTAGE OF CASES IN ERROR BY SOURCE, CAUSE,
AND TIMING OF FIRST ERRORS

Error	Study Sample (N=13,368)	Total Sample (N=18,335)
Source of Error		
Earned income	34.2%+	33.7%
Unearned income	24.1	24.4
Resources	5.9	6.3
Deductions	19.6	20.1
Household size	12.3	12.0
Other nonfinancial	1.6	1.5
Computational	2.1	2.0
Total	100.0	100.0
Cause of Error		
Client-caused		
Information not reported	39.2	38.2
Incomplete reporting	19.2	18.5
Other client error	0.9	0.8
Total	59.4	57.5
Agency-caused		
Policy misapplied	12.5	13.6
Failure to take action	22.1	22.9
Arithmetic error	3.9	3.9
Other agency error	2.1	2.1
Total	40.6	42.5
Timing of Error		
At/before recertification	58.9	59.2
Since recertification	41.1	40.8

⁺I.e., in 34.2% of the error cases in the study sample, earned income was the source of the first error.

Error Characteristics of PA and NPA Cases

Differences between PA and NPA cases generally are larger than those between the study sample and the total sample, but most are still quite small. As shown in Table II-5, eligibility errors occurred in a somewhat larger percentage of NPA cases than of PA cases (5.6% vs. 3.9%, respectively), and, overall, NPA cases are very slightly more likely than PA cases to have payment losses (12.8% vs. 12.1%). Conversely, PA cases are slightly more likely than NPA cases to involve underpayments to eligibles (7.8% vs. 7.0%). These small differences are reflected in the total percentage of cases with errors--23.7% for PA and 25.4% for NPA cases. All differences are statistically significant at the .01 level, primarily due to the large samples involved.

An exception to the generally small PA-NPA differences is in the mean dollar value of the payments made in error to ineligibles (Table II-6): about \$110 for PA cases, compared to only about \$84 for NPA cases, approximately a 30% difference. This larger value for PA cases is probably explained by the larger size of PA households (see Section III), most of whom are households with children. PA cases also have somewhat larger average overissuances to eligibles than do NPA cases (about \$41 vs. about \$36), as well as larger mean overpayments (about \$57 vs. about \$51). However, the mean dollar values of underpayments are approximately equal for the two groups (about \$33), as are the mean dollar values of all payment errors (about \$49 for PA and about \$46 for NPA). All PA/NPA differences are statistically significant at the .01 level, except for the value of underpayments to eligibles.

Table II-7 presents the mean percentage of Food Stamp allotments that is in error for PA and NPA cases. Consistently larger percentages of NPA allotments than of PA allotments are in error. Most notably, among NPA eligibles who were underpaid, the underpayment error amounted to an average of 67% of the correct allotment, whereas among PA eligibles who were underpaid, the error averaged only 44% of their correct allotment.

Table II-5
PERCENTAGE OF PA AND NPA CASES IN ERROR BY ERROR CATEGORY

<u>Error Category</u>	<u>PA (N=34,323)</u>	<u>NPA (N=40,474)</u>
Payments to eligibles	3.9% ⁺	5.6%**
Overissuances to eligibles	12.1	12.8 **
Total overpayments*	16.0	18.5 **
Underpayments to eligibles	7.8	7.0 **
Total errors	23.7	25.4 **

* Sum of payments to eligibles and overissuances to eligibles.

⁺I.e., in 3.9% of the PA cases in the sample, payments were made to eligibles.

** Significantly different from PA at $\alpha \leq .01$.

Table II-6
MEAN DOLLARS IN ERROR AMONG PA AND NPA
ERROR CASES BY ERROR CATEGORY

Error Category	PA		NPA	
	Amount	N	Amount	N
Payments to eligibles	\$109.64 ⁺	1,327	\$84.06**	2,277
Overissuances to eligibles	40.52	4,136	35.89**	5,190
Total overpayments*	57.31	5,463	50.58**	7,467
Underpayments to eligibles	32.82	2,670	33.30	2,815
Total errors	49.27	8,133	45.85**	10,287

⁺I.e., the mean amount paid in error to PA eligibles was \$109.64.

^{*}Sum of payments to eligibles and overissuances to eligibles.

^{**}Significantly different from PA at $\alpha \leq .01$.

Table II-7
 MEAN PERCENTAGE OF FOOD STAMP ALLOTMENT
 PAID IN ERROR TO PA AND NPA CASES BY ERROR CATEGORY

<u>Error Category</u>	<u>PA</u>	<u>NPA</u>
Payments to eligibles	100.0% ⁺	100.0%
Overissuances to eligibles	30.3	35.2**
Total overpayments*	47.2	55.0**
Underpayments to eligibles	44.0	67.0**
Total errors	46.2	58.2**

⁺I.e., 100% of the dollar value of the allotments to eligibles was in error. (Ineligibles, by definition, should receive \$0, so all of their allotment is in error.)

^{*}Sum of payments to eligibles and overpayments to eligibles.

^{**}Significantly different from PA at $\alpha \leq .01$.

Similarly, among NPA cases with payment losses, the error amounted to an average of 55% of the correct allotment value, compared with 47.2% for PA cases. Across all error cases, 58.2% of the dollar value of the NPA allotments were paid in error, versus 46.2% of the PA allotments. Except for payments to eligibles, all PA/NPA differences are statistically significant at the .01 level.

The distribution of PA and NPA error cases by the source, cause, and timing of the first error is shown in Table II-8. Not surprisingly, NPA errors are more likely than PA errors to involve earned income (37.4% vs. 28.9%) or resources (8.6% vs. 3.5%). Relative to PA errors, NPA errors are somewhat more likely to be client-caused (52.4% of PA error cases vs. 61.6% of NPA error cases), perhaps reflecting the often less stringent documentation requirements for NPA cases than for PA cases. These NPA errors are slightly more likely than PA errors to be due to missing information or incomplete reporting and to occur at or before recertification (61.2% vs. 56.5%). On the other hand, PA errors are somewhat more likely than NPA errors to involve household size (16.5% of PA error cases vs. 8.5% of NPA error cases), perhaps due to the different definition of household size that applies to PA cases, creating some confusion and, hence, opportunity for error. PA errors are also more likely than NPA errors to involve deductions (23.6% vs. 17.3%) and to be agency-caused (47.6% vs. 38.4%) due to a failure to take action.

Table II-8
PERCENTAGE OF ERROR CASES BY SOURCE, CAUSE, AND TIMING
OF FIRST ERRORS IN NPA AND PA CASES

Error	PA	NPA
Source of Error		
Earned income	28.9 ⁺	37.4**
Unearned income	23.4	25.0**
Resources	3.5	8.6**
Deductions	23.6	17.3**
Household size	16.5	8.5**
Other nonfinancial	1.6	1.4
Computational	2.4	1.7**
Total	100.0	100.0
 Cause of Error		
Client-caused		
Information not reported	36.7	39.3**
Incomplete reporting	14.7	21.4**
Other client error	0.9	0.8
Total	52.4	61.6**
Agency-caused		
Policy misapplied	14.1	13.2
Failure to take action	27.6	19.2**
Arithmetic error	3.8	4.0
Other agency error	2.2	2.0
Total	47.6	38.4**
 Timing of Error		
At/before recertification	56.5	61.2**
Since recertification	43.5	38.8**

⁺I.e., in 28.9% of the PA error cases, the first error was due to earned income.

**Significantly different from PA at $\alpha \leq .01$.

III FSP HOUSEHOLD AND PARTICIPATION CHARACTERISTICS

In this section we describe selected characteristics of households whose active cases were subject to QC review in our 12-month analysis period. Characteristics of households in the study sample are compared to a broader sample of cases to determine if important differences exist.* Similarities in the two samples give us confidence that these and later study findings are relevant to FSP cases as a whole. We also compare characteristics of households who receive public or general assistance (PA) to those of non-public assistance households (NPA). This dichotomy is potentially important in understanding FSP error and error control activities, since program regulations and procedures differ for the two groups.

Characteristics of the Study Sample

Table III-1 presents descriptive statistics on selected household characteristics of our study sample and the broader sample of QC cases. The table demonstrates the fundamental similarities in characteristics of the two samples.

In both samples, households average just under three persons. Approximately half of the heads of household are white, while over one-third

*The study sample includes cases from about 900 areas in 38 states. The larger sample, referred to as "Total Sample" in data tables, are all cases in 41 states for the 12-month analysis period.

Table III-1

HOUSEHOLD CHARACTERISTICS OF ACTIVE QC REVIEW CASES

Case Characteristics	Study Sample		Total Sample	
	Amount	N	Amount	N
Average Household Size	2.7	53,892	2.8	74,762
Ethnic Identification				
Percentage white	46.8	44,114**	50.3	59,594
Percentage black	39.1	44,114	36.4	59,594
Percentage hispanic	8.9	44,114	8.6	59,594
Percentage other	5.2	44,114	4.6	59,594
Percentage of Households That Are:				
Alien	4.6	53,732	4.1	74,537
Migrant	.0	53,732	.1	74,537
Income				
Percentage with earned income	22.3	53,923	21.9	74,797
Percentage with any income	89.5	53,923	87.2	74,797
Percentage with earned income \geq \$500	11.7	53,923	11.2	74,797
Percentage receiving PA/GA*	47.9	53,923	45.9	74,797
Percentage with PA/GA $>$ \$200	31.4	53,923	30.4	74,797
Percentage receiving Social Security or pension	27.0	53,923	26.7	74,797
Percentage receiving SSI	18.7	53,923	18.5	74,797
Percentage receiving other income	14.7	53,923	13.4	74,797
Percentage with net income	78.7	53,923	76.4	74,797
Deductions				
Percentage with shelter deductions	86.3	53,923	84.0	74,797
Percentage with medical deductions	4.9	53,923	4.8	74,797
Percentage with Liquid Assets	24.2	53,923	25.8	74,797

* Public assistance or general assistance.

** The sample is smaller for ethnic variables because data were not included on the QC data form used in the first QC period included for some states in our analyses.

of the households are headed by black persons. The study sample has a slightly larger proportion of black heads of household and a smaller proportion of white heads of household than the larger sample, though these differences are quite small. Hispanic households and other ethnic groups make up about 14% of the sample. Migrant households comprise about 4% of both samples, while households with migrant workers are only about .1% of cases in the sample.

The QC data contain information on several forms of income a household might receive. Table III-1 indicates that although only about 22% of households reported receiving earned income, a large majority (about 88%) reported receiving some form of income. In most cases, reported incomes were small; only about 11% of cases reported earned incomes of \$500 or more.

Many of the households reported receiving unearned income from one or more sources. Just under half of the households reported receiving general assistance (GA) or public assistance (PA), primarily Aid to Families with Dependent Children (AFDC). For almost a third of the households, GA or PA benefits were \$200 or more for the month. About 27% of households received Social Security or private pension benefits. Just over 18% of the households received Supplemental Security Income (SSI). Other sources of income were reported by about 14% of households. Once deductions were considered, just over three-quarters of the households (77%) reported having net income.

In addition to an earned income deduction, major deductions in determining eligibility are allowed for shelter and medical expenses. About 85% of households claimed a shelter deduction, while less than 5% claimed a deduction for high medical expenses. Liquid assets were reported by about a fourth of households.

Participation Characteristics of FSP Households

The QC data also offer some information on FSP households' participation in the program, as presented in Table III-2. The average Food

Table III-2
FOOD STAMP PARTICIPATION CHARACTERISTICS

Case Characteristics	Study Sample		Total Sample	
	Amount	N	Amount	N
Average Food Stamp Allotment	\$107.39	53,923	\$106.49	74,797
Percentage Receiving Expedited Services in Review Period	5.4	53,789	5.2	74,614
Percentage of Cases with Most Recent Action as:				
Initial certification	25.4	53,923	25.1	74,797
Recertification	74.6	53,923	74.9	74,797
Average Months in Certification Period	7.1	52,796	7.3	73,385
Average Months Between (Re)Certification and Review	3.9	44,103	3.8	59,499

Stamp allotment to sample households is about \$107 for the month, or about \$39 per person. During this one year period, about 5% of the households received emergency Food Stamp benefits under the expedited services provision of the program.

About one-quarter of the cases included in the QC sample were reviewed after initial certification, but before recertification. The remaining 75% of cases had been recertified one or more times. The recertification period averaged just over 7 months for both samples. The average QC review was conducted about 4 months after the most recent case action.

Characteristics of PA and NPA Cases

Public assistance (PA) cases are distinguished from nonpublic assistance cases in the regulations to which they are subject and often in the process by which they are handled in the local welfare agency. Here we also examine whether PA and NPA households themselves differ on important characteristics.

Table III-3 compares PA and NPA households in our total sample. PA households are larger, averaging 3.2 persons compared to 2.4 for NPA households. This is not surprising given that PA households are largely AFDC recipients with one or more children. Single-person households or those with no children are most often found in the NPA population.

There are also noticeable ethnic differences between PA and NPA households. Black, Hispanic, and other nonwhite heads of household are more heavily represented in the PA population, while the NPA population is more predominantly white. The proportions of alien and migrant households do not differ between the two groups.

Income sources and levels differ markedly between the two kinds of households. Only about 13% of PA households reported having earned income, whereas about 29% of NPA households reported earned income. This is perhaps

Table III-3
HOUSEHOLD CHARACTERISTICS OF PA AND NPA CASES*

Case Characteristics	PA		NPA	
	Amount	N	Amount	N
Average Household Size	3.2	34,305	2.4	40,448
Ethnic Identification				
Percentage white	41.8	26,185	57.0**	33,402
Percentage black	41.0	26,185	32.8**	33,402
Percentage hispanic	11.1	26,185	6.7**	33,402
Percentage other	6.1	26,185	3.5**	33,402
Percentage of Households That Are:				
Alien	4.1	34,173	4.0	40,355
Migrant	.0	34,173	.1	40,355
Income				
Percentage with any income	98.4	34,319	77.8**	40,469
Percentage with earned income	13.3	34,319	29.2**	40,469
Percentage with earned income \geq \$500	4.7	34,319	16.7**	40,469
Percentage with PA/GA \geq \$200	66.3	34,319	--	--
Percentage receiving Social Security or pension	11.4	34,319	39.7**	40,469
Percentage receiving SSI	7.2	34,319	28.1**	40,469
Percentage receiving other income	10.2	34,319	16.1**	40,469
Percentage with net income	85.0	34,319	69.3**	40,469
Deductions				
Percentage with shelter deductions	90.8	34,319	78.3**	40,469
Percentage with medical deductions	12.8	34,319	7.8**	40,469
Percentage with Liquid Assets	17.2	34,319	33.1**	40,469

* This table is based on the total sample of QC data from 41 states.

** Significantly different from PA at $\alpha \leq .01$.

explained by the large number of female-headed households with young children in the PA population. Childcare responsibilities may prevent these mothers from working, reducing the proportion of households with earned income. Almost all PA households reported some income, as expected; by definition, they are receiving PA or GA benefits. Just over three-fourths of NPA households reported receiving any income. Income levels tend to be higher for NPA households; about 17% reported incomes for the month of \$500 or greater, while only about 5% of PA households reported incomes that high. The majority of PA households (66.3%), however, reported receiving PA or GA benefits of at least \$200 for the month.

The pattern of receipt of other benefits and income favors NPA households. Almost 40% of NPA households receive Social Security or other pension benefits compared to only about 11% of PA households; this is not surprising given that households with elderly members are much more likely to be in the NPA than the PA population. About 28% of NPA households receive SSI benefits, almost four times the 7.2% of PA households that receive SSI. Less marked differences are apparent in the receipt of income from other sources; about 10% of PA households and 16% of NPA households reported receiving other income.

Balancing income against deductions, more PA households (85%) reported having net income than NPA households (69.3%). This is in spite of the larger proportion of PA households claiming shelter and medical deductions (90.9% and 12.8%, respectively) compared to NPA households (78.3% and 7.8%). About one-third of NPA households reported liquid assets, almost twice the proportion for PA households (17.2%).

In addition to PA and NPA households being different on these key eligibility factors, Table III-4 demonstrates that characteristics of their participation in the FSP also differ. PA households average a much larger monthly Food Stamp allotment (\$126.76) than NPA households (\$89.31). This may be explained largely by differences in household size. The average allotments per capita for PA households (\$39.61) and NPA households (\$35.96) are much closer in size.

Table III-4
FOOD STAMP PARTICIPATION CHARACTERISTICS
FOR PA AND NPA CASES*

Case Characteristics	PA		NPA	
	Amount	N	Amount	N
Average food stamp allotment	\$126.76	34,319	\$89.31**	40,469
Percentage receiving expedited services in review period	2.6	34,228	7.3**	40,377
Percentage of cases with most recent action as:				
Initial certification	19.5	34,319	29.8**	40,469
Recertification	80.5	34,319	70.2**	40,469
Average months in certification period	7.6	33,230	7.0**	40,147
Average months between (Re) certification and review	3.9	26,363	3.7**	33,130

* This table is based on the total sample of QC data from 41 states.

** Significantly different from PA at $\alpha \leq .01$.

A larger proportion of NPA households (7.3%) received expedited services for the review period than was true for PA households (2.6%). The PA or GA benefits received by PA households act as a buffer against the dire straits that are necessary to qualify for expedited services.

About 80% of PA cases had been recertified for Food Stamp benefits at least once, compared to about 70% for NPA cases. PA cases also average slightly longer certification periods than their NPA counterparts (7.6 and 7.0 months, respectively). There are no important differences between the two types of cases in the average number of months between certification or recertification and the QC review.

In the next section, the types of errors reported in Section II are related to the household and participation characteristics described here to identify whether any of them are important predictors of error.

IV THE RELATIONSHIP BETWEEN HOUSEHOLD CHARACTERISTICS AND ERRORS

In this section we examine how household characteristics affect the likelihood and amount of error. Thus, we examine whether some types of cases are more susceptible to error than other types of cases. The analysis explores the relationship between case characteristics and both the dollar amount of error and the probability of error for each of five types of error:

- . Overpayments, which are subdivided into:
 - Overissuances to eligibles, and
 - Payments to ineligibles.
- . Underpayments, and
- . The total error (the combination of overpayments and underpayments).

The case characteristics used in the analysis include virtually all those available in the QC data and discussed in earlier sections, including demographic characteristics, the presence of incomes, deductions and resources, the Food Stamp allotment, and some measures of the frequency and recency of certification and recertification.* In the following subsections we describe the model used in the analysis and present the results.

The Model

We conducted our analysis by estimating models in which error amounts and binary variables indicating the presence of an error are the dependent

* Because data on individual family members were not available for all states in the sample, our analysis does not use data on the age and sex of family members.

variables, and case characteristics are the independent variables. The dependent variables used in the analysis are:

- . Amount of error,
 - Dollar overpayments (to both eligibles and ineligibles),
 - Dollar overissuances to eligibles,
 - Dollar payments to ineligibles,
 - Dollar underpayments,
 - Total dollars in error (sum of overpayments and underpayments),
- . Incidence of error--Binary variables indicating:
 - Whether an overpayment error occurred,
 - Whether an overissuance to an eligible occurred,
 - Whether a payment to an ineligible occurred,
 - Whether an underpayment error occurred,
 - Whether any error (underpayment or overpayment) occurred.

Thus, the dependent variables include both measures of the amount of error and of the incidence of error and distinguish between underpayments and overpayments and between payments to ineligibles and overissuances to eligibles.

The independent variables incorporated in the analysis are:

- . Demographic characteristics
 - Number of household members,
 - Whether the household contains an alien,
 - Binary variables indicating the race of the head of household, including white, black, Hispanic, and other nonwhite.
- . Binary variables indicating the presence of income types, including
 - Earned income of less than \$500 a month,
 - Earned income of more than \$500 a month,
 - RSDI (Social Security), or pensions.
 - Supplemental Security Income (SSI),
 - Other income,
- . Binary variables indicating the presence of deductions, including:
 - Shelter expense, and
 - Medical expense.

- . A binary variable indicating whether the household has net income (income in excess of deductions),
- . A binary variable indicating whether the household has liquid resources,
- . The amount of the Food Stamp allotment, and
- . Variables describing the frequency and recency of certification and recertification, including:
 - The length of the certification period in months,
 - A set of binary variables indicating the length of time from certification to QC review for cases whose most recent action was initial certification--Certified the same month or 1 month before QC review, certified 2-3 months before QC review, certified 4-6 months before QC review, and certified 7 or more months before QC review, and
 - A set of binary variables indicating the length of time from recertification to QC review for ongoing cases--Recertified the same month or 1 month before QC review (the "left out" category), recertified 2-3 months before QC review, recertified 4-6 months before QC review, and recertified 7 or more months before QC review.*

While there is no a priori reason to expect a relationship between errors and demographic variables such as household size and race, we do expect a relationship between errors and the presence of income and deductions and the variables representing the frequency and recency of certification and recertification. Food Stamp cases with incomes and deductions are more complex and, hence, may be more susceptible to error. For example, in a case with several different types of income, there are possibilities for error in each type of income; the computation of the Food Stamp allotment is also more difficult and, hence, more susceptible to error. One would also expect that cases are more likely to be in error several months after certification or recertification than during the month

*The binary variables for length of time from certification to QC review and from recertification to QC review together are mutually exclusive and exhaustive. That is, each case falls into one and only one of these categories. Hence, for each case one of these variables is one and the others are zero. Because the category excluded from the model is recertified in the same month or 1 month before review, the coefficients of the other variables measure the difference in errors relative to cases that were recertified in the same month or 1 month before the QC review.

of certification or recertification because the passage of time will often result in changes in the household's circumstances which may not be reported by the household or acted on by the agency in a timely fashion. The household's assigned certification period may also be related to errors. Food Stamp agencies generally assign shorter certification periods to those cases they believe are more likely to have changes in circumstances. Hence, cases with longer certification periods should be less susceptible to error.

In addition to the independent variables described above, several other variables were incorporated into the model, although they are not presented in the tables of results. These variables include the following:

- . Binary variables for time period--These variables are intended to account for trends over time in the error rate due to either changes in economic conditions or changes in Food Stamp program regulations. While there are occasional differences among periods in the amount or incidence of error, there is no general time trend.
- . A binary variable indicating use of the old QC review form--Several of the variables used in the analysis (race and months from recertification to review) are available only on the new QC review form. Most states in our sample implemented this form before April 1, 1981 when our analysis period began for most states. However, our sample does include the previous 6 months for a few states, and several states did not implement the new form until a later date. For these states and periods, variables available only on the new form are missing. Hence, we set these variables to equal the mean over all cases, and included in the model a binary variable indicating that the new form was used.
- . A binary variable for coding errors in months from certification to review--In several states, months from certification to review was miscoded on the QC data files so that all we know is whether the time since certification is 1 month, 2 months, 3 months, or more than 3 months. Thus, for many cases we know that it has been more than 3 months since re-certification but we cannot distinguish between 4 months and 6 months and 9 months. To account for this problem, we treated these cases as having been recertified 6 months earlier, and included in the model a binary variable indicating that this assumption has been made.

The basic model used to estimate the relationship between errors and the case characteristic is a multiple regression model in which the

dependent variable is an error amount or an indicator of the presence of an error and the independent variables are case characteristics. The model can be written as:

$$E = a + bX + e$$

where E is the dependent variable (such as the dollar overpayment, X is a vector of independent variables, e is an error term, a is a constant term, and b is a vector of parameters representing the effects of the case characteristics on errors.

We estimated this model using ordinary least squares (OLS). While this statistical technique is appropriate when the dollar amount of the error is the dependent variable, it suffers from some deficiencies when the dependent variable is a binary indicator of the presence of an error. First, predicted probabilities can fall outside of the interval from 0 to 1. Second, the error terms are necessarily heteroscedastic (i.e., the variance of the error term varies among cases); consequently, the estimates of the standard errors of the parameters are biased. Despite these disadvantages, OLS estimates are used because they are relatively simple to compute and easy to interpret. To assess the sensitivity of our results to the use of ordinary least squares, we present a comparison of OLS estimates to estimates of a logit model in Appendix A. The results in that appendix indicate that the OLS and logit models have very similar implications.

The sample used for the analysis in this section includes all cases in the total sample, except cases that received expedited service. These cases are excluded because the definition of an error is different for cases that received expedited service in the month of review. The resulting sample contains 37,501 NPA cases and 33,442 PA cases.

Because the nature and intensity of certification and recertification procedures differ for PA cases and NPA cases, we investigated whether separate models should be estimated for these two types of cases. This investigation was conducted by estimating a combined regression model

(including an indicator of receipt of Public Assistance or General Assistance payments) for the entire sample and separate models for the PA and NPA subsamples and conducting an F-test of the null hypothesis that the coefficients of all variables except the intercept were the same. This null hypothesis was rejected at the 1% level ($F = 11.9$ with 28 and 70885 degrees of freedom for the total dollar error). Thus, we present estimates of separate models for NPA and PA cases.*

Results

The results of our analysis are presented in Tables IV-1 through IV-4. Table IV-1 presents the estimated effects of the case characteristics on the total dollar error (the sum of overpayments and underpayments), the amount of underpayment error, and the amount of overpayment error (to both eligibles and ineligibles). Table IV-2 partitions the estimated effects on dollar overpayment errors into effects on overissuances to eligibles and payments to ineligibles.** Table IV-3 presents the effects on the incidence of any error, underpayment errors, and overpayment errors and is comparable to Table IV-1. Finally, Table IV-4 presents the estimated effects on the incidence of overissuances to eligibles and payments to ineligibles and is comparable in form to Table IV-2.

* Preliminary analysis, which did not allow interactions between the most recent case action and months since recertification to review, indicated significant differences in the coefficients of the variables representing months between recertification and review. However, differences in the coefficients of other variables between the initial certification and recertification subsamples were small. For this reason, we included interactions between certification/recertification and months from recertification/certification to review in the model rather than estimate separate models for initial certifications and recertifications.

** The estimated effects on overpayment error appear in both Tables IV-1 and IV-2 to demonstrate the partition of overpayments into overissuances to eligibles and payments to ineligibles and the partition of total error into underpayments and overpayments.

Table IV-1

ESTIMATED IMPACT OF CASE CHARACTERISTICS ON AMOUNT OF UNDERPAYMENT ERROR,
OVERPAYMENT ERROR AND TOTAL ERROR FOR NPA AND PA CASES

Case Characteristics	Amount of Error (Dollar Impacts)					
	NPA Cases			PA Cases		
	All Error	Under- payment	Over- payment	All Error	Under- payment	Over- payment
Demographic characteristics						
Household size	\$1.91**	\$1.20**	\$0.71**	\$1.03**	\$1.07**	\$-0.04
Whether aliens	0.62	0.38	0.24	0.71	-0.54	1.25
Race						
White	--	--	--	--	--	--
Black	1.53**	0.46**	1.07**	2.89**	0.96**	1.93**
Hispanic	2.20**	0.02	2.18**	2.21**	1.06**	1.15
Other nonwhite	0.31	1.34**	-1.02	0.58	1.18**	-0.59
Whether have income						
Earned income						
Less than \$500/month	2.12**	0.93**	1.19**	7.43**	3.43**	4.00**
\$500/month or more	3.81**	1.56**	2.24**	9.71**	3.22**	6.48**
RSDI or pensions	0.45	-0.58**	1.04*	3.04**	0.34	2.70**
SSI	-3.01**	0.40*	-2.62**	0.75	-0.02	0.77
Other income	2.36**	0.78**	1.58**	0.71	1.12**	-0.41
Whether have deductions						
Shelter	2.64**	0.16	2.47**	0.39	-0.59*	0.98
Medical	0.44	-0.30	0.75	-2.04	-3.24**	1.20
Whether have net income	0.44	0.60**	-0.16	1.95**	0.47*	1.48**
Whether have liquid resources	-1.56**	-0.68**	-0.88**	-1.97**	-1.19**	-0.79
Food Stamp allotment amount (\$100's)	6.61**	-2.08**	8.69**	4.00**	-2.23**	6.24**

Table IV-1 (Concluded)

	Amount of Error (Dollar Impacts)					
	NPA Cases			PA Cases		
	All Error	Under- payment	Over- payment	All Error	Under- payment	Over- payment
Case Characteristics						
Certification characteristics						
Length of certification period	0.03	-0.08**	0.11	-0.20**	-0.02	-0.19**
Time from certification to QC review for initial certifications						
Certified same month or 1 month before review	0.25	-.31	0.56	1.25	0.42	0.82
Certified 2-3 months before review	6.07**	1.18**	4.89**	3.85**	0.40	3.45*
Certified 4-6 months before review	11.17**	2.07**	9.10**	6.98**	1.47	5.51**
Certified 7 or more months before review	6.45**	0.69	5.75**	5.62**	0.80	4.82**
Time from recertification to QC review for ongoing cases						
Recertified same month or 1 month before review	--	--	--	--	--	--
Recertified 2-3 months before review	4.81**	1.40**	3.41**	2.00**	0.28	1.73**
Recertified 4-6 months before review	5.84**	1.44**	4.40**	3.04**	0.51	2.54**
Recertified more than 7 months before review	4.73**	1.01**	3.71**	4.55**	0.85**	3.71**
R ²	0.09	0.03	0.07	0.04	0.03	0.03
F-ratio	129.48**	44.05**	106.94**	44.59**	38.37**	33.47**
Average amount of error	11.92	2.44	9.48	11.75	2.57	9.18

*Significant at the 5% level.

**Significant at the 1% level.

Note: Estimated standard errors are presented in Table B-1.

Table IV-2

IMPACT OF CASE CHARACTERISTICS ON AMOUNT OF OVERPAYMENT ERROR
TO ELIGIBLES, INELIGIBLES AND OVERALL FOR NPA AND PA CASES

	Amount of Overpayment Error (Dollar Impacts)					
	NPA Cases			PA Cases		
	All	Eligibles	Ineligibles	All	Eligibles	Ineligibles
<u>Case Characteristics</u>						
Demographic characteristics						
Household size	\$0.71**	\$-0.48**	\$1.20**	\$-0.04	\$-0.67**	\$0.63**
Whether aliens	0.24	0.13	0.11	1.25	1.18*	0.06
Race						
White	--	--	--	--	--	--
Black	1.07**	1.05**	0.02	1.93**	1.15**	0.78*
Hispanic	2.18**	1.62**	0.56	1.15	1.12**	0.03
Other nonwhite	-1.02	0.02	-1.05	-0.59	-0.30	-0.29
Whether have income						
Earned income						
Less than \$500/month	1.19*	1.18**	0.02	4.00**	2.90**	1.09*
\$500/month or more	2.24**	1.67**	0.58	6.48**	4.20**	2.28**
RS DI or pensions	1.04*	0.68**	0.36	2.70**	2.23**	0.47
SSI	-2.62**	-0.98**	-1.64**	0.77	1.54**	-0.77
Other income	1.58**	0.74**	0.84*	-0.41	0.15	-0.56
Whether have deductions						
Shelter	2.47**	1.30**	1.18**	0.98	0.07	0.91
Medical	0.75	0.69*	0.06	1.20	-0.69	1.89
Whether have net income	-0.16	0.47	-0.63	1.48**	0.88**	0.60
Whether have liquid resources	-0.88**	-0.84**	-0.04	-0.79	-0.42	-0.37
Food Stamp allotment amount (\$100's)	8.69**	6.73**	1.96**	6.24**	6.20**	.04

Table IV-2 (Concluded)

	Amount of Overpayment Error (Dollar Impacts)					
	NPA Cases			PA Cases		
	All	Eligibles	Ineligibles	All	Eligibles	Ineligibles
Case Characteristics						
Certification characteristics						
Length of certification period	0.11	0.16**	-0.05	-0.19**	-0.12**	-0.07
Time from certification to QC review for initial certifications						
Certified same month or 1 month before review	0.56	0.30	0.26	0.82	0.20	0.63
Certified 2-3 months before review	4.89**	2.48**	2.41**	3.45**	1.40	2.05
Certified 4-6 months before review	9.10**	4.06**	5.03**	5.51**	2.06*	3.45**
Certified 7 or more months before review	5.75**	2.69**	3.06**	4.82**	2.36*	2.46
Time from recertification to QC review for ongoing cases						
Recertified same month or 1 month before review	--	--	--	--	--	--
Recertified 2-3 months before review	3.41**	1.79**	1.62**	1.73**	0.94**	0.79
Recertified 4-6 months before review	4.40**	2.21**	2.19**	2.54**	1.12**	1.41**
Recertified 7 or more months before review	3.71**	2.13**	1.58**	3.71**	2.83**	0.87
R ²	0.07	0.07	0.03	0.03	0.04	0.01
F-ratio	106.94**	93.39**	35.33**	33.47**	48.1**	5.97**
Average amount of error	9.48	4.69	4.79	9.18	4.92	4.26

*Significant at the 5% level.

**Significant at the 1% level.

Note: Estimated standard errors are presented in Table B-2.

Table IV-3

ESTIMATED IMPACT OF CASE CHARACTERISTICS ON THE INCIDENCE OF OVERPAYMENT ERRORS,
UNDERPAYMENT ERRORS, AND ALL ERRORS FOR NPA AND PA CASES

	Incidence of Errors (Percentage Point Impacts)					
	NPA Cases			PA Cases		
	All Errors	Under-payment	Over-payment	All Errors	Under-payment	Over-payment
<u>Case Characteristics</u>						
Demographic characteristics						
Household size	3.1%**	1.8%**	1.3%**	1.8%**	2.0%**	-0.2%
Whether aliens	-0.4	0.3	-0.7	1.9	-0.8	2.7*
Race						
White	--	--	--	--	--	--
Black	4.1**	1.2**	3.0**	5.6**	2.0**	3.6**
Hispanic	3.2**	0.2	3.5**	4.1**	2.1**	2.0*
Other nonwhite	1.7	1.9*	-0.2	3.6**	2.9**	0.7
Whether have income						
Earned income						
Less than \$500/month	10.4**	3.8**	6.6**	20.0**	9.3**	10.8**
\$500/month or more	10.2**	3.0**	7.3**	18.7**	5.4**	13.4**
RSDI or pensions	0.4	-1.5**	1.9**	6.0**	0.6	5.5**
SSI	-8.0**	-1.5**	-6.5**	4.0**	1.1	3.0**
Other income	5.1**	2.6**	2.4**	5.1**	4.6**	0.5
Whether have deductions						
Shelter	3.7**	-0.8*	4.6**	3.1**	-1.7**	4.8**
Medical	3.3**	-0.7	4.1**	-7.9**	-8.4**	0.5
Whether have net income	4.3**	3.8**	0.5	6.5**	3.1**	3.3**
Whether have liquid resources	-3.5**	-1.7**	-1.8**	-4.7**	-2.9**	-1.8**
Food Stamp allotment amount (\$100's)	0.2	-3.6**	3.8**	-1.1	-4.8**	3.7**

Table IV-3 (Concluded)

	Incidence of Errors (Percentage Point Impacts)					
	NPA Cases			PA Cases		
	All Errors	Under-payment	Over-payment	All Errors	Under-payment	Over-payment
<u>Case Characteristics</u>						
<u>Certification characteristics</u>						
Length of certification period	0.3**	-0.1	0.4**	-0.2**	0.0	-0.3**
Time from certification to QC review for initial certifications						
Certified same month or 1 month before review	-0.6	-0.4	-0.3	2.5	2.1*	0.4
Certified 2-3 months before review	7.4**	1.9**	5.5**	4.0**	0.4	3.6**
Certified 4-6 months before review	16.8**	4.6**	12.2**	10.0**	3.8**	6.3**
Certified 7 or more months before review	14.4**	1.0	13.5**	10.3**	3.3**	7.0**
Time from recertification to QC review for ongoing cases						
Recertified same month or 1 month before review	--	--	--	--	--	--
Recertified 2-3 months before review	7.4**	2.8**	4.7**	3.1**	0.8	2.3**
Recertified 4-6 months before review	11.2**	3.6**	7.6**	5.5**	1.4*	4.1**
Recertified 7 or more months before review	8.6**	2.7**	5.9**	8.5**	1.9**	6.6**
R ²	6.9	2.9	4.4	5.0	3.4	2.4
F-ratio	98.6	39.4	62.0	63.2	42.0	29.8
Percent of cases in error	25.2	7.6	17.6	23.9	7.8	16.0

*Significant at the 5% level.

**Significant at the 1% level.

Note: Estimated standard errors are presented in Table B-3.

Table IV-4

IMPACT OF CASE CHARACTERISTICS ON THE INCIDENCE OF OVERPAYMENT ERRORS TO
ELIGIBLES, INELIGIBLES, AND OVERALL FOR PA AND NPA CASES

Case Characteristics	Incidence of Overpayment Errors (Percentage Point Impacts)					
	NPA Cases			PA Cases		
	All	Eligibles	Ineligibles	All	Eligibles	Ineligibles
Demographic characteristics						
Household size	1.3%**	-0.2%	1.5%**	-0.2%	-0.8%**	0.6%**
Whether aliens	-0.7	-0.7	-0.0	2.7*	2.0*	0.8
Race						
White	--	--	--	--	--	--
Black	3.0**	2.7**	0.2	3.6**	2.4**	1.1**
Hispanic	3.5**	2.8**	0.7	2.0*	1.8*	0.2
Other nonwhite	-0.2	0.0	-0.3	0.7	0.7	0.0
Whether have income						
Earned income						
Less than \$500/month	6.6**	5.3**	1.3**	10.8**	8.6**	2.1**
\$500/month or more	7.3**	6.1**	1.1*	13.4**	9.7**	3.6**
RSDI or pensions	1.9**	1.2*	0.8*	5.5**	5.1**	0.4
SSI	-6.5**	-3.1**	-3.4**	3.0**	3.5**	-0.5
Other income	2.4**	1.1*	1.3**	0.5	0.9	-0.4
Whether have deductions						
Shelter	4.6**	3.7**	0.9*	4.8**	3.8**	1.0*
Medical	4.1**	3.6**	0.5	0.5	-1.2	1.7
Whether have net income	0.5	0.9	-0.4	3.3**	3.1**	0.2
Whether have liquid resources	-1.8**	-2.2**	0.4	-1.8**	-1.6**	-0.1
Food Stamp allotment amount (\$100's)	3.8**	7.9**	-4.1**	3.7**	6.2**	-2.5**

Table IV-4 (Concluded)

	Incidence of Overpayment Errors (Percentage Point Impacts)					
	NPA Cases			PA Cases		
	All	Eligibles	Ineligibles	All	Eligibles	Ineligibles
Case Characteristics						
Certification characteristics						
Length of certification period (months)	0.4**	0.5**	-0.1	-0.3**	-0.2**	-0.1
Time from certification to QC review for initial certifications						
Certified same month or 1 month before review	-0.3	-0.5	0.3	0.4	-0.3	0.7
Certified 2-3 months before review	5.5**	2.7**	2.8**	3.6**	1.7	1.8**
Certified 4-6 months before review	12.2**	6.7**	5.6**	6.3**	3.2**	3.0**
Certified 7 or more months before review	13.5**	8.3**	5.2**	7.0**	4.9**	2.1*
Time from recertification to QC review for ongoing cases						
Recertified same month or 1 month before review	--	--	--	--	--	--
Recertified 2-3 months before review	4.7**	3.1**	1.5**	2.3**	1.5*	0.8*
Recertified 4-6 months before review	7.6**	5.2**	2.4**	4.1**	2.8**	1.2**
Recertified more than 7 months before review	5.9**	4.9**	1.0	6.6**	6.1**	0.5
R ²	4.4	4.1	1.8	2.4	2.5	1.0
F-ratio	62.0	57.4	24.5	29.8	31.0	11.7
Percent of cases in error	17.6	12.8	4.9	16.0	12.1	3.9

*Significant at the 5% level.

**Significant at the 1% level.

Note: Estimated standard errors are presented in Table B-4.

The numbers presented in these tables are the coefficients in the regression model discussed above.* For the continuous variables in the model (household size, Food Stamp allotment, and the length of certification period), these coefficients can be interpreted as the amount the average error increases when these variables increase by one unit. For example, Table IV-1 indicates that for NPA cases the average amount of all errors to households with three members is \$1.91 higher than the average amount of errors to households with two members. That is, for every additional household member, the average amount of error increases by \$1.91 for NPA cases. The remaining variables are categorical and the coefficients can be interpreted as the difference in the average amount of error for households in the category compared to households outside of the category after controlling for the effects of all other case characteristics in the model. Thus, Table IV-1 indicates that among NPA cases the average error is \$0.62 greater among households containing an alien than among households that do not contain an alien (this result is not statistically significant). Similarly, the coefficient of the variable indicating that the race of the household head is black indicates that the average amount of overpayment error is \$1.53 greater for black households than for white households (the omitted category).

These tables reveal that the relationships between the case characteristics and errors have several general patterns:

- Characteristics have similar effects on errors for both NPA cases and for PA cases. However, the magnitude of the effect tends to be larger for PA cases.
- Characteristics that increase the amount of overpayments also tend to increase the amount of underpayments. Thus, most characteristics appear to be indicators of error, and much of the overpayments to a group of people are offset by underpayments to people in the same group. For example, while large households tend to have larger overpayments, they also have larger underpayments that more than offset the larger overpayments.

*Estimated standard errors of the coefficients presented in these tables are presented in Appendix B.

- . Characteristics that affect overissuances to eligibles either affect payments to ineligibles in the same direction or not at all. Thus, if a characteristic increases overissuances to eligibles, it either increases or has no effect of payments to ineligibles. This result is to be expected because, for a given case, an overissuance to an eligible would become a payment to an ineligible if the amount of error became larger than the Food Stamp allotment.
- . Most characteristics affect the amount of error and the incidence of error in a similar manner.

Exceptions to these general patterns are highlighted in our discussion of the relationship between errors and specific characteristics below.

Contrary to expectations, the demographic characteristics often have a statistically significant relationship to error. The number of household members tends to increase errors, both underpayments and overpayments. However, it is the only variable that increases payments to ineligibles while decreasing overissuances to eligibles. This result may arise because small errors in household size cause relatively large errors in the allotment. Whether an alien is present in the household has little relationship with either the amount or incidence of error. Households with a nonwhite household head tend to have more overpayments and underpayments than do households with a white head of household. However, there is little difference in payments to ineligibles between whites and nonwhites.

The presence of the various types of income (except SSI) increases both overpayments and underpayments. Most of the increase in overpayments results from overissuances to eligibles rather than payments to ineligibles. Further, the effect on errors of having earnings (either less than \$500 or more than \$500) is substantially greater for PA cases than for NPA cases. In contrast, for NPA cases, the presence of SSI seems to be an indicator of cases with lower overpayment errors. This is consistent with a common understanding among FSP staff that such households are quite stable and subject to few errors.

The presence of a shelter deduction is another important indicator of overpayment errors among NPA cases. Whether the household has net income appears to be related to the presence of error in PA households, but not in

NPA households. The presence of liquid resources is negatively associated with overpayment errors for NPA cases and with underpayment errors for both NPA and PA cases. One possible explanation of this unexpected result is that households who reveal liquid resources (an easily-concealed item) to the agency, are likely to be reporting other items accurately.

The amount of the Food Stamp allotment itself is strongly associated with the presence of errors. However, much of this effect is "mechanical". For example, the allotment amount is positively associated with overpayments and negatively associated with underpayments. This may result from the fact that the over- or underpayment is incorporated in the Food Stamp amount, thus inducing a spurious correlation, and from the fact that households with small allotments cannot receive large overpayments. Because of the mechanical nature of this relationship between the allotment and the error amount, we also estimated models in which the dependent variable was the ratio of the error to the Food Stamp allotment. The results of these models were generally similar to the results presented here except for the impact of the Food Stamp allotment, which tended to be small. One anomaly in the relationship between the allotment amount and errors is that the allotment amount increases the average amount of payment error to eligibles while decreasing the incidence of payments to eligibles. This result probably occurs because, while cases with large allotments have fewer eligibility errors, eligibility errors that do occur are large (because the error equals the allotment).

As expected, the length of the certification period is negatively related to overpayments for PA cases. Thus, the local agencies appear to be assigning longer certification periods to PA cases that are less susceptible to error. However, the average overpayment differs by only 60¢ between cases certified for 6 months and cases certified for 3 months. This relationship does not, however, hold for NPA cases. Indeed, the incidence of errors is positively associated with the length of the certification period for NPA cases.

As expected, errors are substantially more likely several months after certification or recertification than in the month of re/certification or the month after re/certification. This is true for both kinds of cases and all kinds of errors. The increase in the average error several months after certification or recertification appears to be larger for cases whose most recent action was initial certification than for those that were recertified. One possible explanation for this result is that changes in circumstances are more likely for new cases than for cases that have been eligible long enough to be recertified. Thus, it might be desirable to assign shorter certification periods to new cases than to ongoing cases. In the month of certification or recertification, however, there is little difference between new cases and ongoing cases in both the amount and incidence of error.

While the estimated models contain a large number of variables with significant effects on error, and the equations as a whole are strongly significant,* these models explain only a small portion of the variance of errors among individuals. Indeed, no equation explains even 10% of the variance of the error amounts. Further, the models explain more of the variance of total errors and overpayment errors than of underpayment errors and explain more of the variance of overissuances to eligibles than of payments to ineligibles. The latter result is probably due to the fact that payments to ineligibles include only large errors.

Based on these results, it seems unlikely that variations in case characteristics among states will explain much of the known variation in error rates among states. To assess this latter hypothesis, we estimated some additional models in which we included dummy variables for the states both alone and in combination with case characteristics. The case characteristics in these models included only those characteristics over which the

*The F-test of the null hypothesis that all coefficients except the intercept are zero is presented in the tables and is always strongly significant.

local and state agencies have no control.* The models incorporating only the binary variable for states explain approximately 1% of the variance of over-payment errors and total errors among individuals. Only a small portion of this variation in error due to states is explained by differences in client characteristics among states.¹ Our results indicate that variation in demographic characteristics among states accounts for only 30% of the variance in errors due to states for NPA cases and less than 10% for PA cases.^{**} Thus, the bulk of the variance among states in error rates does not result from the case characteristics examined in this study. In subsequent analysis, we will examine whether the remaining variation in errors can be explained by differences in the certification and recertification procedures used by the states.

*Thus we excluded the length of the certification period and the dummy variables for the various lengths of time since certification and recertification. However, the proportion of cases certified in the month or the month before the QC review (i.e., new cases) was kept in the model.

**These figures are based on the following calculation. First, we calculated the proportion of variance explained in the model that included both demographic characteristics and the dummy variables for states,

R_{DS}^2 ; the proportion of variance explained by demographic characteristics alone, R_D^2 ; and the proportion of variance explained by the dummy variables for states alone, R_S^2 . We then calculated the proportion of variance explained by state after controlling for demographic characteristics by

$R_{SID}^2 = R_{CS}^2 - R_C^2$. We then calculated the ratio of R_{SID}^2 to R_S^2 , which represents the proportion of the variation due to states that remain after controlling for demographic characteristics. This ratio exceeded .7 for the NPA models and .9 for the PA models.

in the case, then both an earned income and calculation error were recorded in the QC data.

To overcome this problem with the proportional model, we estimated an alternative model that separated the impact of the first error recorded from the impact of subsequent errors.* Specifically, we included binary variables for whether the first error listed was of a specific type as well as additional variables for the number of subsequent errors of specific types that occurred in each case.

As an example of how the results of this model can be used to attribute dollar error to each source, we present the results for total error for NPA cases in Table V-1. The first column presents the estimated amount of error for each source when that is the first error listed. The second column presents the estimated amount of error for subsequent errors. These results support the hypothesis that the \$5 minimum error results in the proportional model being inappropriate. The estimated size of subsequent errors for most sources are small and generally near \$5.** If these errors had been the only error in the case, the case would not have been counted in error. There are two exceptions: subsequent earned income errors, and particularly subsequent household size errors, represent substantial amounts of benefits paid in error. We investigated whether the size of these two subsequent errors was influenced by the source of the first error and found that there were no significant interactions.

From the estimated size of first and subsequent errors, we have calculated the amount of the total error that can be attributed to each

* In our survey of state QC directors, we found that in all but 2 of 38 states, the first error recorded is the most important in a case. The model we estimated, however, does not make any assumptions about the ordering of the errors.

** The estimated impact of subsequent deductions is a small negative number that is not significantly different from zero. It should be interpreted as essentially zero.

Table V-1
ESTIMATED IMPACT OF FIRST AND SUBSEQUENT ERRORS ON TOTAL ERROR BY SOURCE OF ERROR--NPA CASES

Source of Error	Estimated Amount of First Error	Estimated Amount of Subsequent Error	Percent of Errors of Specified Type that are First Errors	Estimated Average Amount of Error When Error Present	Percent of All Variances Due to Specified Source	Estimated Total Dollar Error Due to Specified Source	Estimated Percent of Total Dollar Error Due to Specified Source
Earned income	\$50.00** (0.81)	\$12.81** (1.25)	75.9%	\$41.04	26.0%	\$10.65	44.2%
Uncashed income	34.02** (0.96)	3.62** (0.92)	53.4	19.85	24.7	4.90	20.3
Resources	62.92** (1.61)	5.90** (0.97)	33.4	24.95	13.5	3.37	14.0
Deductions	18.33** (1.11)	-0.97 (0.73)	34.1	5.61	26.7	1.50	6.2
Household size	51.27** (1.62)	29.83** (2.78)	77.2	46.38	5.8	2.68	11.1
Other nonfinancial	80.75** (3.79)	0.84 (4.76)	61.3	49.83	1.2	0.61	2.5
Computations	32.57** (3.38)	6.41* (2.91)	43.4	17.76	2.1	0.37	1.6
Total					100%	24.08	100%

*Significant at the 5% level.

**Significant at the 1% level.

V DOLLAR VALUE BY SOURCE, CAUSE, AND TIMING OF ERRORS

In developing appropriate corrective actions, it is useful to know what proportion of the total amount of error can be attributed to various causes, so that policymakers can target corrective actions to the most costly errors. Currently, the Food Stamp QC data do not attribute the dollar amount of error to specify kinds of errors when there is more than one error in a case. If, for example, both a household size error and an earned income error are made, the QC reviewer does not record the separate dollar impact of each error, but rather records the total dollar impact and the fact that both errors were made. Even if the reviewers were required to calculate the separate dollar impacts, the procedures to allocate dollar error to each source would be arbitrary. It is not clear, for example, whether the size of the household error should be calculated assuming the correct income amounts or whether the size of the earned income error should be calculated assuming the correct household size when both types of errors are present.

Because of these data limitations, the Food Stamp Quality Control Reports include only the incidence of error by various sources and by whether the errors were agency- or client-caused. Although it is useful to know which errors occur most frequently, focusing only on the incidence of errors may be misleading if the dollar impacts of errors vary greatly.

In this section, we develop a statistical methodology to estimate the contribution of various error types to the total dollar amount of error. By examining how the incidence of various errors is related to dollar errors over a large sample of QC cases, we can estimate the independent effect of each error source on dollar error, while controlling for other types of errors that may also be present in the case. In the next subsection we describe the data and the statistical model that we use to estimate the

relationships between source and dollar amount of error. We then present the estimated dollar amounts by source of error, by whether the error was client- or agency-caused, and by whether the error was present before the most recent certification. We also examine whether the impact of the source of error differs by whether the error was agency- or client-caused.

Statistical Models to Estimate the Dollar Amount of Error by Type

In estimating the dollar error that is attributable to each source of error, we have used multiple regressions to isolate the independent impact of each source of error. The samples for these regressions include all cases with errors, and the dependent variables are the dollar amounts of error. The independent variables represent the number of errors from each specific source which occurred in each case. The coefficients of these independent variables represent the average dollar error that is associated with an error of each type, controlling for all other types of error that may also have occurred.

We estimated several models using alternative specifications of the independent variables. The simplest model is a proportional model that includes variables for the number of each type of error that occurred in a case. This model implies that each error has an additive and independent effect on the amount of error. When we estimated this model, however, we determined that it was not an appropriate specification because of the presence of a large and significant intercept in the equation. This intercept implies that the size of the error was independent of the number of errors in a case.

This result could occur because of a threshold on the amount of error that is imposed by QC regulations. A case is not counted as being in error unless the amount of error is greater than \$5. Once a case is found to be in error, however, all sources of error are recorded. Thus, for example, a small calculation error of \$2 would not create a QC error if no other mistakes were found. If, however, there were also a \$50 earned income error

source. The third column of Table V-1 presents the percent of errors that are first errors for each source. From this we can weight the size of the first and subsequent errors to obtain the average amount of error for each source, which is presented in the fourth column. The fifth column presents the proportion of all errors that are due to each source. The amount of the average error multiplied by the proportion of errors due to each source represents the dollar amount of the average error that can be attributed to each source, presented in the sixth column. The seventh column presents the percent of dollar error that can be attributed to each source.

In the next subsection, we present tables that contain for each source the average amount of error when an error is present, the percent of the errors that are due to that source, and the percent of the dollar error that can be attributed to each source. These numbers can be calculated from the results presented in Appendix Tables C-1 through C-10, which contain the estimated size of first and subsequent error and the proportion of first errors.

Sources of Error

Based on the methodology described above, we have estimated the amount of overpayment error (to both eligibles and ineligibles) and of total error that can be attributed to various sources of error for NPA and PA cases (Tables V-2 and V-3). These results emphasize the importance of earned income errors. Among NPA cases, 26.1% of the overpayment errors are earned income errors, but because of the relatively large size of these errors (\$44), earned income errors account for 44.4% of the dollar amount of NPA overpayments. Thus, the importance of earned income errors is even greater than would be suggested by simply examining the incidence of errors. In contrast, errors in deductions account for 24.4% of NPA overpayment errors, but because the average size of such errors is less than \$5, errors in deductions account for only 4.2% of the dollar amount of NPA overpayments.

Table V-2
ESTIMATED AMOUNT OF OVERPAYMENT ERROR ATTRIBUTABLE TO VARIOUS SOURCES OF ERROR

Source of Error	NPA Error Cases (n=7,428)			PA Error Cases (n=5,451)		
	Estimated Average Amount of Error When Error Present	Percent of Overpayment Variances Due to Specified Source	Estimated Percent of Dollar Overpayment Error Due to Specified Source	Estimated Average Amount of Error When Error Present	Percent of Overpayment Variances Due to Specified Source	Estimated Percent of Dollar Overpayment Error Due to Specified Source
Earned income	\$44.47	26.1%	44.4%	\$57.84	24.5%	43.0%
Unearned income	21.00	26.4	21.2	24.18	26.2	19.3
Resources	29.14	15.1	16.8	32.92	8.0	8.0
Deductions	4.47	24.4	4.2	6.18	26.6	5.0
Household size	46.88	5.0	9.0	61.24	10.6	19.8
Other nonfinancial	57.46	1.4	3.1	67.13	1.7	3.4
Computations	19.03	1.7	1.4	20.94	2.4	1.5
Total		100%	100%		100%	100%

Table V-3
ESTIMATED AMOUNT OF TOTAL ERROR ATTRIBUTABLE TO VARIOUS SOURCES OF ERROR

Source of Error	NPA Error Cases (n=10,232)			PA Error Cases (n=8,100)		
	Estimated Average Amount of Error When Error Present	Percent of All Variances Due to Specified Source	Estimated Percent of Total Dollar Error Due to Specified Source	Estimated Average Amount of Error When Error Present	Percent of All Variances Due to Specified Source	Estimated Percent of Total Dollar Error Due to Specified Source
Earned income	\$41.04	26.0%	44.2%	\$51.46	21.8%	38.9%
Unearned income	19.85	24.7	20.3	22.22	24.3	18.7
Resources	24.95	13.5	14.0	26.38	7.1	6.5
Deductions	5.61	26.7	6.2	7.52	30.9	8.1
Household size	46.38	5.8	11.1	57.63	11.6	23.3
Other nonfinancial	49.83	1.2	2.5	56.45	1.4	2.7
Computations	17.76	2.1	1.6	17.05	2.9	1.7
Total		100%	100%		100%	100%

Errors in unearned income result in 21.2% and errors in resources result in 16.8% of the dollar amount of NPA overpayments. Errors in household size and nonfinancial errors are both relatively large when they occur (the latter are large primarily because they result in eligibility errors). Because these errors are infrequent, however, they account for a relatively small percent of NPA dollar errors (9.0% and 3.1% respectively). Errors in computing net income or the Food Stamp allotment are relatively small and infrequent and thus account for only 1.4% of the dollar amount of NPA overpayment errors.

The pattern of results for PA cases is generally similar. Earned income errors are also very important for PA cases, accounting for 43% of the dollar amount of PA overpayment errors. Unearned income errors are also important, accounting for 19.3% of dollar overpayment error. There are, however, some differences between NPA and PA cases. Resource errors are less frequent for PA cases, perhaps because PA cases are more disadvantaged and have fewer resources to report. On the other hand, household size errors are more frequent for PA cases, partly because the households are larger and perhaps also because of the differences in the definition of the recipient unit between AFDC and Food Stamp regulations.

Table V-3 presents the results for total error for NPA and PA cases. These results are very similar to those for overpayments. Specifically, the importance of earned income error is again emphasized: 44.2% of the total amount of NPA error and 38.9% of the total amount of PA error is attributable to earned income errors.

Cause of Error

Table V-4 contains the estimated amount of overpayment error attributable to causes of error. We present the estimated amount of overpayment error attributable to all agency errors combined and all client errors combined, and also the amount attributable to specific types of agency and client errors. For NPA cases, 74.4% of the dollar amount of

Table V-4
ESTIMATED AMOUNT OF OVERPAYMENT ERROR ATTRIBUTABLE TO VARIOUS CAUSES OF ERROR

Cause of Error	NPA Error Cases (n=7,428)			PA Error Cases (n=5,451)		
	Estimated Average Amount of Error When Error Present	Percent of Overpayment Variances Due to Specified Cause	Estimated Percent of Dollar Overpayment Error Due to Specified Cause	Estimated Average Amount of Error When Error Present	Percent of Overpayment Variances Due to Specified Cause	Estimated Percent of Dollar Overpayment Error Due to Specified Cause
Client-caused	\$31.72	61.0%	74.4%	\$40.55	55.2	68.7
Information not reported	36.35	32.7	45.7	46.32	35.2	50.0
Information incompletely reported	26.29	27.6	27.9	30.42	19.3	18.0
Other client error	28.79	0.8	0.9	33.00	0.7	0.8
Agency-caused	17.06	39.0	25.6	22.80	44.8	31.3
Policy incorrectly applied	15.13	13.8	8.0	21.48	13.2	8.7
Failed to follow up on information provided	20.55	18.9	14.9	24.47	25.6	19.2
Arithmetic error	10.13	4.7	1.8	15.19	3.9	1.8
Other agency error	13.51	1.6	0.9	24.58	2.0	1.5

overpayments can be attributed to client-caused error. This is a result both of client-caused error occurring more frequently (61% versus 39%), and of client-caused error being almost twice as large as agency-caused error (\$32 versus \$17). The client not reporting information is the largest contributor to client-caused overpayment error. Among agency-caused error, not following up appropriately on information provided is the largest contributor to overpayment error.

For PA cases, the amount of overpayments attributable to agency-caused error is higher, perhaps due to the more complex nature of PA cases. Nonetheless, the amount of overpayments that can be attributed to clients not reporting information is higher for PA than for NPA cases, accounting for 50% of overpayments to PA households.

Table V-5 presents the results for total error, including both overpayments and underpayments. Because a greater proportion of underpayment error than overpayment error is agency-caused, the amount of agency-caused total error is greater than for overpayment error. Much of this increase in agency-caused error is accounted for by the increase in the amount of error resulting from the agency not correctly following up on information provided by the client.

Source of Error by Cause of Error

The results of the previous subsections indicate that earned income is an important source of error and that client-caused errors account for a majority of dollar error. In this subsection we examine the source of error by cause of error. We do this by expanding our estimation models to include separate variables for the number of each source of error that are client-caused and the number that are agency-caused. The results for overpayments to NPA cases are presented in Table V-6 and to PA cases in Table V-7.

Table V-5
ESTIMATED AMOUNT OF TOTAL ERROR ATTRIBUTABLE TO VARIOUS CAUSES OF ERROR

Cause of Error	NPA Error Cases (n=10,232)			PA Error Cases (n=8,100)		
	Estimated Average Amount of Error When Error Present	Percent of All Variances Due to Specified Cause	Estimated Percent of Total Dollar Error Due to Specified Cause	Estimated Average Amount of Error When Error Present	Percent of All Variances Due to Specified Cause	Estimated Percent of Total Dollar Error Due to Specified Cause
Client caused	\$29.29	58.7%	71.6%	35.94	50.6	63.7
Information not reported	34.63	31.7	45.7	41.27	32.3	46.6
Information incompletely reported	22.91	26.3	25.1	26.54	17.6	16.3
Other client error	26.00	0.7	0.8	29.62	0.8	0.8
Agency caused	16.52	41.3	28.4	20.94	49.4	36.3
Policy incorrectly applied	14.74	15.1	9.3	19.75	14.8	10.2
Failed to follow up on information provided	19.97	19.2	16.0	22.55	27.7	21.9
Arithmetic error	10.21	5.1	2.2	14.13	4.5	2.2
Other agency error	13.85	1.8	1.1	23.13	2.2	1.8

Table V-6
ESTIMATED AMOUNT OF OVERPAYMENT ERROR ATTRIBUTABLE TO VARIOUS SOURCES OF ERROR BY CAUSE OF ERROR--NPA CASES

Source of Error	Client-Caused Error			Agency-Caused Error		
	Estimated Average Amount of Error When Error Present	Percent of Overpayment Variances Due to Specified Source	Estimated Percent of Dollar Overpayment Error Due to Specified Source	Estimated Average Amount of Error When Error Present	Percent of Overpayment Variances Due to Specified Source	Estimated Percent of Dollar Overpayment Error Due to Specified Source
Earned income	\$49.65	18.1%	34.4%	\$32.47	8.0%	9.9%
Unearned income	26.40	13.7	13.8	15.41	12.7	7.5
Resources	32.04	12.2	14.9	14.50	2.9	1.6
Deductions	4.75	12.6	2.3	5.25	11.7	2.4
Household size	48.74	3.5	6.6	38.88	1.5	2.2
Other nonfinancial	53.51	0.8	1.7	62.36	0.5	1.2
Computation	--	--	--	20.03	1.9	1.4

Table V-7

ESTIMATED AMOUNT OF OVERPAYMENT ERROR ATTRIBUTABLE TO VARIOUS SOURCES OF ERROR BY CAUSE OF ERROR--PA CASES

Source of Error	Client-Caused Error			Agency-Caused Error		
	Estimated Average Amount of Error When Error Present	Percent of Overpayment Variances Due to Specified Source	Estimated Percent of Dollar Overpayment Error Due to Specified Source	Estimated Average Amount of Error When Error Present	Percent of Overpayment Variances Due to Specified Source	Estimated Percent of Dollar Overpayment Error Due to Specified Source
Earned income	\$66.14	16.5%	33.1%	\$40.29	8.0%	9.8%
Unearned income	31.75	11.7	11.2	18.29	14.6	8.4
Resources	33.80	6.5	6.7	24.04	1.5	1.1
Deductions	6.31	12.9	2.5	6.56	13.7	2.7
Household size	66.72	6.6	13.4	50.51	4.0	6.2
Other nonfinancial	66.80	1.0	2.0	64.29	0.7	1.3
Computation	--	--	--	22.01	2.4	1.6

V-13

Client-caused errors in earned income are by far the largest single cause of overpayment of Food Stamp benefits. Over 34% of the dollar amount of NPA overpayment errors result from client-caused errors in earned income; similarly, 33% of the dollar amount of PA overpayment errors are due to such errors. These results indicate that techniques such as wage matching and monthly reporting of earned income are aimed at the most important source of error. An important component of the remainder of our study will be to determine whether such techniques are cost-effective.

Approximately equal proportions of unearned income errors are client- and agency-caused. The size of client-caused errors in unearned income are considerably larger, however, so that the proportion of dollar error attributable to clients is greater than that attributable to agencies. Nonetheless, unearned income errors account for a substantial amount of agency-caused overpayment error.

As noted above, resource errors are a more important source of error for NPA cases than for PA cases. The results in Table V-6 indicate that most of these errors are client-caused: 14.9% of the dollar amount of NPA overpayments are due to client-caused resource errors, while only 1.6% is due to agency-caused resource errors.

Tables V-8 and V-9 present the results for total error for NPA and PA cases respectively. The pattern is similar to that for overpayment error.

Timing of Error

Tables V-10 and V-11 presents the amount of overpayment and total error that can be attributed to errors that occurred before the most recent certification and to errors that occurred afterward. Among NPA cases, approximately 60% of dollar error is due to mistakes present in the case at the most recent certification; among PA cases, the percent is somewhat lower (55%). In all cases, however, the size of errors that occur after the most recent certification is larger, averaging between \$9 more for NPA total

Table V-8

ESTIMATED AMOUNT OF TOTAL ERROR ATTRIBUTABLE TO VARIOUS SOURCES OF ERROR BY CAUSE OF ERROR--NPA CASES

S-15

Source of Error	Client-Caused Error			Agency-Caused Error		
	Estimated Average Amount of Error When Error Present	Percent of All Variances Due to Specified Source	Estimated Percent of Total Dollar Error Due to Specified Source	Estimated Average Amount of Error When Error Present	Percent of All Variances Due to Specified Source	Estimated Percent of Total Dollar Error Due to Specified Source
Earned income	\$46.74	17.2	33.4	\$29.66	8.8	10.8
Unearned income	24.81	12.4	12.8	14.97	12.3	7.6
Resources	27.94	10.8	12.5	11.30	2.8	1.3
Deductions	5.38	13.4	3.0	6.58	13.3	3.6
Household size	47.25	4.1	7.9	41.72	1.7	3.0
Other nonfinancial	46.92	0.8	1.5	53.59	0.5	1.0
Computation	--	--	--	18.70	2.1	1.6

Table V-9

ESTIMATED AMOUNT OF TOTAL ERROR ATTRIBUTABLE TO VARIOUS SOURCES OF ERROR BY CAUSE OF ERROR--PA CASES

Source of Error	Client-Caused Error			Agency-Caused Error		
	Estimated Average Amount of Error When Error Present	Percent of All Variances Due to Specified Source	Estimated Percent of Total Dollar Error Due to Specified Source	Estimated Average Amount of Error When Error Present	Percent of All Variances Due to Specified Source	Estimated Percent of Total Dollar Error Due to Specified Source
Earned income	\$59.89	13.8	28.6	\$36.87	8.1	10.3
Unearned income	29.89	9.6	10.0	17.69	14.7	9.0
Resources	27.64	5.6	5.4	16.11	1.5	0.8
Deductions	6.95	13.6	3.3	8.46	17.4	5.1
Household size	61.02	7.0	14.9	50.98	4.6	8.1
Other nonfinancial	57.19	0.8	1.6	52.89	0.6	1.1
Computation	--	--	--	17.69	2.8	1.7

Table V-10

ESTIMATED AMOUNT OF OVERPAYMENT ERROR ATTRIBUTABLE TO BEFORE AND AFTER MOST RECENT CERTIFICATION

Timing of Error	NPA Error Cases (n=7,428)			PA Error Cases (n=5,451)		
	Estimated Average Amount of Error When Error Present	Percent of Overpayment Variances Due to Specified Time	Estimated Percent of Dollar Overpayment Error Due to Specified Time	Estimated Average Amount of Error When Error Present	Percent of Overpayment Variances Due to Specified Time	Estimated Percent of Dollar Overpayment Error Due to Specified Time
At or before most recent certification	\$23.78	68.7%	62.8%	\$30.02	61.1%	56.0%
After most recent certification	31.15	31.3	37.2	37.02	38.9	44.0
Total		100%	100%		100%	100%

Table V-11

ESTIMATED AMOUNT OF TOTAL ERROR ATTRIBUTABLE TO BEFORE AND AFTER MOST RECENT CERTIFICATION

<u>Timing of Error</u>	NPA Error Cases (n=10,232)			PA Error Cases (n=8,100)		
	<u>Estimated Average Amount of Error When Error Present</u>	<u>Percent of All Variances Due to Specified Cause</u>	<u>Estimated Percent of Total Dollar Error Due to Specified Cause</u>	<u>Estimated Average Amount of Error When Error Present</u>	<u>Percent of All Variances Due to Specified Cause</u>	<u>Estimated Percent of Total Dollar Error Due to Specified Cause</u>
At or before most recent certification	\$21.25	68.4%	60.3%	\$26.41	60.0%	55.3%
After most recent certification	30.23	31.6	39.7	31.98	40.0	44.7
Total		100%	100%		100%	100%

errors to \$5.57 more for PA total errors. These results suggest, therefore, that monthly reporting and other techniques for monitoring clients circumstances between certifications may be potentially important in reducing dollar error.

Summary and Conclusions

In this section, we have developed a methodology for estimating the amount of error that is attributable to various sources, causes and timing of error. The results indicate that errors in earned income are even more important than their frequency would suggest. For example, among NPA cases, 26% of overpayment errors occur in earned income, but because the size of such errors is large, earned income errors account for over 44% of the dollar amount of overpayments. The results for the impact of causes of error indicate that over 70% of the dollar value of overpayments can be attributed to client-caused errors. When we examine the sources of error by cause of error, we find that approximately one-third of dollar overpayments can be attributed to client-caused earned income errors. With respect to the timing of errors, the results indicate that errors that occurred after the most recent certification are larger than those that occurred before the most recent certification.

The results of this analysis highlight the importance of specific types of error. In our subsequent analysis, we will pay particularly close attention to the cost-effectiveness of procedures that are designed to reduce those errors that make large contributions to the total amount of Food Stamp benefits that are paid in error.

VI SUMMARY

This report examined the kinds, sources, and causes of errors present in Food Stamp cases. The report also described the kinds of households represented, investigated the relationship between household characteristics and error patterns, and attributed the dollars in error to various types of error.

The report was based on data from the Food Stamp Program Quality Control (QC) system and analyzed nearly 75,000 QC cases drawn from forty states plus the District of Columbia. This was the largest, most complete sample of QC cases available when the analyses were conducted. Most cases were from April 1981 through March 1982, the most recent period for which data were available for the bulk of the states. When data from that period were unavailable, data from October 1980 through September 1981 were used. Below we highlight the main findings of these analyses.

Error Patterns

- o Overall, about one-fourth of the cases contained an error. Many errors were minor and the dollar overpayment rate was 8.7 percent. The most prevalent kind of error was overissuance to eligibles (about 13 percent of cases), followed by underpayments to eligibles (about 7 percent) and payments to ineligibles (about 5 percent).
- o Among cases with errors, the average overpayment was about \$53, consisting of payments to ineligibles (averaging about \$93) and overissuances to eligibles (about \$38). Underpayments averaged about \$33.
- o Mistakes related to the amount of the household's earned income were the largest source of first errors* (about one-third of cases), followed by mistakes related to unearned income (about 24 percent) and deductions (about 20 percent).

* A case may contain several errors (for example, the client underreported income and the caseworker also miscalculated the shelter deduction). The report analyzed the first error recorded for each case for two reasons: (i) they are almost always the most important and (ii) the appropriate weight for subsequent errors is unclear because the dollar amount of error is not partitioned among multiple error sources by QC reviewers.

- o The majority of first errors (about 58 percent of cases) were client-caused, due largely to failure to report information. About 42 percent were agency-caused, due largely to failure to take action on reported information.
- o Public Assistance (PA) and Nonpublic Assistance (NPA) cases had different error patterns. Compared to NPA cases, PA cases:
 - contained slightly fewer overpayment errors (16.0 percent vs. 18.5 percent) ****** but marginally more underpayment errors (7.8 percent vs. 7.0 percent);
 - involved somewhat larger average overpayment amounts (\$57.31 vs. \$50.58), although there was no difference in underpayment amounts;
 - were less likely to contain errors related to income or resources (56 percent of first errors vs. 71 percent), but more likely to contain errors related to deductions and household size (40 percent vs. 26 percent); and
 - were more likely to involve agency-caused errors (48 percent vs. 38 percent).

Household and Case Characteristics

- o Sample households averaged about 2.8 persons; about half had white heads of household, about 38 percent were black, and 9 percent were Hispanic. About one in five households had earned income, about 46 percent received public assistance or general assistance, 27 percent received social security or pensions, and about one-fourth reported liquid assets.
- o The average Food Stamp allotment was about \$107. The average certification period was seven months. About 5 percent of the sample cases received expedited services in the review period.
- o PA households were larger, less likely to earn income or receive Social Security benefits, and more likely to have a nonwhite head of household than NPA households. PA households received larger allotments (due to larger household size and lower income) and slightly longer certification periods than NPA households, but were less likely to receive expedited services.

Relating Household and Case Characteristics to Errors

Household and case characteristics explained only a small portion of errors. The study analyzed the combined explanatory effect of household and case characteristics on several measures of error, including both the dollar amount and incidence of

****** Although small, these differences--like the others reported here--are statistically significant.

overpayment, underpayment and total errors. When combined, household and case characteristics never explained more than 9 percent of the variance of errors among individuals and usually explained only 3 percent of the variance.*

- o Although the combined explanatory power of household and case characteristics was quite weak, some characteristics nonetheless show a statistically significant relationship to error. These are described below.
 - Households with more members had more overpayments and underpayments than households with fewer members.
 - Households with a nonwhite head had more underpayments and more overissuances to eligibles than households with a white head (but there was little difference between whites and nonwhites in payments to ineligibles).
 - For all types of income except Supplemental Security Income, households with income had more overpayments and underpayments, than did households without income.
- o Characteristics that were related to the amount of overpayments were often related to the amount of underpayments. Thus, these characteristics appear to be indicators of a general tendency toward error, and overpayments to a group of people are partially offset by underpayments to people in the same group.
- o Most characteristics were related to the amount of error and the incidence of error in a similar manner. Likewise, characteristics associated with overissuances to eligibles were usually associated with payments to ineligibles in the same direction. The only meaningful exception was in connection with household size: households with more members had higher payments to ineligibles but smaller overissuances to eligibles than households with fewer members.
- o The average amount of error was substantially higher several months after certification or recertification than at the time of, or in the first month after, re/certification. The average error amount was higher when the most recent action was initial certification rather than recertification.
- o These characteristics usually had a similar relationship to errors for both PA and NPA cases. The magnitude of the impact on errors of having earnings was substantially greater for PA cases than for NPA cases.

*The reader should not confuse variance with the "variances" reported by QC reviewers. We use variance in its statistical sense here. For the nontechnical reader, variance is a measure of the degree to which individual scores on a variable are spread around the average score.

Attributing Dollar Error to Sources of Error

Under the QC system, reviewers only determine the total amount of error in a case. They do not apportion the dollar amount among the various types of error that may be present in a case. The report develops a regression-based analytical technique for attributing dollar error to sources of error. The application of this technique to the QC database results in the findings below.

- o Errors in earned income were even more important in accounting for dollar error than their simple frequency would suggest. Earned income errors accounted for 22 percent of PA errors and 26 percent of NPA errors, but the size of the errors meant that earned income errors accounted for 39 percent and 44 percent of the cost of PA and NPA errors, respectively.
- o Over 70 percent of the dollar value of overpayments were attributable to client-caused errors. Approximately one-third of dollar overpayments were attributable to client-caused earned income errors.
- o Errors that occurred after the most recent certification (that is, errors due to an unreported change in client circumstances) were larger than those that occurred at the most recent certification (for example, due to incorrectly reported client circumstances).

Conclusion

This picture of the patterns of error, household characteristics, and the relationship among them should strengthen efforts to control errors in the Food Stamp Program. As findings are discussed by policymakers and program managers, implications for error control techniques should emerge. These preliminary analyses are also an extremely useful first step in our study of FSP certification and recertification error control activities and demonstrate the relevance of our study sample for commenting on FSP cases more broadly. Finally, understanding the substantial differences in the dollar value attributable to different sources of error will enable us to concentrate our further study on identifying ways to reduce the most costly types of errors in the Food Stamp Program.

Appendix A

**Comparison of Estimates of the Linear Probability Model
and the Logistic Model**

Appendix A

Comparison of Estimates of the Linear Probability Model and the Logistic Model

In Section IV we presented estimates of the relationship between case characteristics and the incidence of errors. These estimates were based on the linear probability model and were estimated by ordinary least squares (OLS). However, the linear probability model suffers from two deficiencies. First, predicted probabilities can fall outside of the interval from zero to 1. Second, the error terms in the model are necessarily heteroscedastic (i.e., the variance of the error term varies among cases); consequently, the estimates of the parameters are inefficient, and the estimated standard errors of the parameters are biased. Despite these deficiencies, OLS was used to estimate the relationship between case characteristics and errors because of its relatively low cost and ease of interpretation.

In this appendix, we compare the OLS estimates with estimates of a model that does not suffer from any of these deficiencies--the logit model. The logit model represents the probability that an error occurs ($P(E)$) by:

$$P(E) = \frac{e^{XB}}{e^{XB} + 1} \quad (1)$$

Where X is the vector of independent variables believed to affect the probability, and B is a vector of parameters to be estimated. By construction, $P(E)$ is contained in the interval (0, 1). In contrast, the linear probability model is given by:

$$p^L(E) = Xd \quad (2)$$

Where d is a vector of parameters. p^L is not constrained to lie in the interval $(0, 1)$.

Table A-1 presents logit estimates of the relationship between case characteristics and whether any error occurs (overpayment or underpayment). The first two columns of the table present the logit estimates of the coefficients of the case characteristics and their standard errors. The last two columns present the OLS estimates and standard errors, which were originally presented in Table IV-3. However, the two sets of coefficients are not directly comparable. Because the OLS coefficients represent the average effect of a one unit change in a case characteristic, corresponding effects of a unit change are presented for the logit model in the middle column of the table, entitled "Transformed Logit Coefficients." These unit effects are calculated as the difference between the predicted probabilities at the means of the other case characteristics when the case characteristic changes by 1. Thus, for categorical case characteristics these numbers represent the percentage point difference in the probability of having an error between cases with the characteristic and cases without the characteristic, evaluating all other variables at their means. The results indicate that the effects of the case characteristics on errors estimated using the logit model are very similar to the effects estimated by OLS. Thus, the two models have virtually identical implications.

Table A-1

COMPARISON OF BINOMIAL LOGIT AND ORDINARY LEAST SQUARES ESTIMATES ON
 INDIVIDUALS EITHER OVER- OR UNDERRUED OR INELIGIBLE FOR NPA CASES
 (Standard Errors in Parentheses)

<u>Independent Variable</u>	<u>Logit Coefficients</u>		<u>Transformed Logit Coefficients</u>	<u>OLS Coefficients</u>	
Demographic characteristics					
Household size	.15**	(.01)	2.8%	3.1%**	(0.3)
Whether aliens	-.20	(.07)	-0.4	-0.4	(1.2)
Race					
White	--	--	--	--	--
Black	.23**	(.03)	4.3	4.1**	(0.5)
Hispanic	.18**	(.06)	3.5	3.2**	(1.1)
Other nonwhite	.09	(.08)	1.8	1.7	(1.4)
Whether have income					
Earned income					
Less than \$500/month	.54**	(.04)	11.1	10.4**	(0.8)
\$500/month or more	.51**	(.04)	10.3	10.2**	(0.8)
RSDI or pensions	.04	(.03)	0.7	0.4	(0.6)
SSI	-.45**	(.03)	-8.1	-8.0**	**(0.6)
Other income	.28**	(.03)	5.4	5.1**	(0.6)
Whether have deductions					
Shelter	.21**	(.04)	3.8	3.7**	(0.7)
Medical	.21**	(.05)	4.0	3.3**	(0.9)
Whether have net income	.25**	(.04)	4.5	4.3**	(0.7)
Whether have liquid resources	-.19**	(.03)	-3.5	-3.5**	(0.5)
Food Stamp allotment (\$100's)	-.02	(.03)	0.3	0.2	(0.6)

Table A-1 (Concluded)

<u>Independent Variable</u>	<u>Logit Coefficients</u>		<u>Transformed Logit Coefficients</u>		<u>OLS Coefficients</u>	
Certification characteristics						
Length of certification period	.02**	(.00)	0.3		0.3**	(0.1)
Time from certification to QC review for initial certifications						
Certified same month or 1 month before review	-.03	(.06)	-0.6		-0.6	(1.0)
Certified 2-3 months before review	.45**	(.06)	9.1		7.4**	(1.0)
Certified 4-6 months before review	.91**	(.07)	19.9		16.8**	(1.3)
Certified 7 or more months before review	.82**	(.09)	17.9		14.4**	(1.7)
Time from recertification to QC review for ongoing cases						
Recertified same month or 1 month before review	--	--	--		--	--
Recertified 2-3 months before review	.43**	(.04)	8.6		7.4**	(0.8)
Recertified 4-6 months before review	.64**	(.05)	12.9		11.2**	(0.9)
Recertified more than 7 months before review	.51**	(.06)	10.4		8.6**	(1.0)

*Significant at the 5% level.
**Significant at the 1% level.

Appendix B

Estimated Standard Errors for Models of the Relationship Between
Case Characteristics and the Amount and Incidence of Error

Table B-1

STANDARD ERRORS OF THE ESTIMATED IMPACTS OF CASE CHARACTERISTICS ON AMOUNT OF UNDERPAYMENT
ERROR, OVERPAYMENT ERROR AND TOTAL ERROR FOR NPA AND PA CASES

Case Characteristics	NPA Cases			PA Cases		
	All Errors	Under-payment	Over-payment	All	Under-payment	Over-payment
Demographic characteristics						
Household size	\$0.17	\$0.07	\$0.17	\$0.18	\$0.06	\$0.17
Whether aliens	0.87	0.35	0.83	0.95	0.36	0.91
Race						
White	--	--	--	--	--	--
Black	0.38	0.15	0.36	0.45	0.17	0.43
Hispanic	0.75	0.30	0.72	0.67	0.25	0.64
Other nonwhite	0.98	0.39	0.93	0.91	0.34	0.87
Whether have income						
Earned income						
Less than \$500/month	0.54	0.21	0.51	0.62	0.23	0.59
\$500/month or more	0.59	0.23	0.56	0.90	0.34	0.86
RSDI or pensions	0.43	0.17	0.41	0.59	0.22	0.56
SSI	0.40	0.16	0.38	0.68	0.26	0.65
Other income	0.43	0.17	0.41	0.61	0.23	0.58
Whether have deductions						
Shelter	0.46	0.18	0.44	0.62	0.23	0.59
Medical	0.60	0.24	0.57	1.60	0.60	1.53
Whether have net income	0.47	0.19	0.45	0.53	0.20	0.50
Whether have liquid resources	0.34	0.13	0.33	0.47	0.18	0.45
Food Stamp allotment	0.42	0.17	0.40	0.44	0.16	0.42

Table B-1 (Concluded)

	NPA Cases			PA Cases		
	All Errors	Under-payment	Over-payment	All	Under-payment	Over-payment
<u>Case Characteristics</u>						
Certification characteristics						
Length of certification period	0.05	0.02	0.05	0.05	0.02	0.05
Time from certification to QC review for initial certifications						
Certified same month or 1 month before review	0.71	0.28	0.68	0.98	0.37	0.94
Certified 2-3 months before review	0.69	0.27	0.66	0.89	0.33	0.85
Certified 4-6 months before review	0.91	0.36	0.87	1.09	0.41	1.04
Certified 7 or more months before review	1.17	0.47	1.12	1.44	0.54	1.38
Time from recertification to QC review for ongoing cases						
Recertified same month or 1 month before review	--	--	--	--	--	--
Recertified 2-3 months before review	0.54	0.21	0.52	0.60	0.23	0.58
Recertified 4-6 months before review	0.64	0.25	0.61	0.67	0.25	0.64
Recertified more than 7 months before review	0.71	0.28	0.68	0.86	0.32	0.82

Note: These are estimated standard errors of the impact estimates presented in Table IV-1.

Table B-2

STANDARD ERRORS OF ESTIMATED IMPACTS OF CASE CHARACTERISTICS ON AMOUNT OF OVERPAYMENT
ERROR TO ELIGIBLES, INELIGIBLES AND OVERALL FOR NPA AND PA CASES

Case Characteristics	NPA Cases			PA Cases		
	All	Eligibles	Ineligibles	All	Eligibles	Ineligibles
Demographic characteristics						
Household size	\$0.17	\$0.09	\$0.14	\$0.17	\$0.10	\$0.14
Whether alien	0.83	0.48	0.72	0.91	0.56	0.74
Race						
White	--	--	--	--	--	--
Black	0.36	0.21	0.32	0.43	0.26	0.35
Hispanic	0.72	0.41	0.62	0.64	0.40	0.52
Other nonwhite	0.93	0.53	0.81	0.87	0.54	0.71
Whether have income						
Earned income						
Less than \$500/month	0.51	0.29	0.45	0.59	0.37	0.48
\$500/month or more	0.56	0.32	0.49	0.86	0.53	0.70
RSDI or pensions	0.41	0.23	0.35	0.56	0.35	0.46
SSI	0.38	0.22	0.33	0.65	0.40	0.53
Other income	0.41	0.23	0.35	0.58	0.36	0.47
Whether have deductions						
Shelter	0.44	0.25	0.38	0.59	0.37	0.48
Medical	0.57	0.33	0.50	1.53	0.95	1.25
Whether have net income	0.45	0.26	0.39	0.50	0.31	0.41
Whether have liquid resources	0.33	0.19	0.29	0.45	0.28	0.37
Food Stamp allotment amount	0.40	0.23	0.35	0.42	0.26	0.34

Table B-2 (Concluded)

	NPA Cases			PA Cases		
	All	Eligibles	Ineligibles	All	Eligibles	Ineligibles
<u>Case Characteristics</u>						
<u>Certification characteristics</u>						
Length of certification period	0.05	0.03	0.04	0.05	0.03	0.04
Time from certification to QC review for initial certifications						
Certified same month or 1 month before review	0.68	0.39	0.59	0.94	0.58	0.76
Certified 2-3 months before review	0.66	0.38	0.57	0.85	0.53	0.69
Certified 4-6 months before review	0.87	0.50	0.76	1.04	0.64	0.85
Certified 7 or more months before review	1.12	0.64	0.97	1.38	0.86	1.12
Time from recertification to QC review for ongoing cases						
Recertified same month or 1 month before review	--	--	--	--	--	--
Recertified 2-3 months before review	0.52	0.30	0.45	0.58	0.36	0.47
Recertified 4-6 months before review	0.61	0.35	0.53	0.64	0.40	0.52
Recertified 7 or more months before review	0.68	0.39	0.59	0.82	0.51	0.67

Note: These are estimated standard errors of the impact estimates presented in Table IV-2.

Table B-3

STANDARD ERRORS OF THE ESTIMATED IMPACTS OF CASE CHARACTERISTICS ON THE INCIDENCE OF
UNDERPAYMENT ERROR, OVERPAYMENT ERROR, AND ANY ERROR FOR NPA AND PA CASES

	NPA Cases			PA Cases		
	All Errors	Under-payment	Over-payment	All	Under-payment	Over-payment
<u>Case Characteristics</u>						
<u>Demographic characteristics</u>						
Household size	.25%	.15%	.22%	.24%	.15%	.21%
Whether aliens	1.23	.74	1.11	1.27	.81	1.11
Race						
White	--	--	--	--	--	--
Black	.54	.32	.49	.60	.38	.52
Hispanic	1.06	.64	.96	.90	.57	.79
Other nonwhite	1.38	.83	1.24	1.22	.78	1.07
<u>Whether have income</u>						
Earned income						
Less than \$500/month	.76	.46	.69	.83	.53	.72
\$500/month or more	.83	.50	.75	1.21	.77	1.05
RSDI or pensions	.60	.36	.54	.79	.50	.69
SSI	.57	.34	.51	.92	.58	.80
Other income	.60	.36	.55	.82	.52	.71
<u>Whether have deductions</u>						
Shelter	.65	.39	.59	.83	.53	.73
Medical	.85	.51	.76	2.15	1.36	1.87
Whether have net income	.67	.40	.61	.71	.45	.62
Whether have liquid resources	.49	.29	.44	.63	.40	.55
Food Stamp allotment amount (\$100's)	.59	.36	.54	.59	.37	.52

Table B-3 (Concluded)

	NPA Cases			PA Cases		
	All Errors	Under-payment	Over-payment	All	Under-payment	Over-payment
<u>Case Characteristics</u>						
Certification characteristics						
Length of certification period	.08	.05	.07	.07	.05	.06
Time from certification to QC review for initial certifications						
Certified same month or 1 month before review	1.01	.61	.91	1.32	.84	1.15
Certified 2-3 months before review	.98	.59	.88	1.20	.76	1.04
Certified 4-6 months before review	1.29	.77	1.16	1.46	.93	1.27
Certified 7 or more months before review	1.65	.99	1.49	1.93	1.23	1.69
Time from recertification to QC review for ongoing cases						
Recertified same month or 1 month before review	--	--	--	--	--	--
Recertified 2-3 months before review	.77	.46	.69	.81	.52	.71
Recertified 4-6 months before review	.90	.54	.81	.90	.57	.79
Recertified 7 or more months before review	1.01	.60	.41	1.16	.74	1.01

Note: These are estimated standard errors of the impact estimates presented in Table IV-3.

Table B-4

STANDARD ERRORS OF THE ESTIMATED IMPACTS OF CASE CHARACTERISTICS ON THE INCIDENCE OF OVERPAYMENT ERRORS TO ELIGIBLES, INELIGIBLES AND OVERALL FOR NPA AND PA CASES

	NPA Cases			PA Cases		
	All	Eligibles	Ineligibles	All	Eligibles	Ineligibles
<u>Case Characteristics</u>						
<u>Demographic characteristics</u>						
Household size	.22%	.19%	.13%	.21%	.18%	.11%
Whether aliens	1.11	.96	.67	1.11	.99	.59
<u>Race</u>						
White	--	--	--	--	--	--
Black	.49	.42	.29	.52	.46	.27
Hispanic	.96	.83	.58	.79	.70	.41
Other nonwhite	1.24	1.08	.75	1.07	.95	.56
<u>Whether have income</u>						
<u>Earned income</u>						
Less than \$500/month	.69	.60	.41	.72	.64	.38
\$500/month or more	.75	.65	.45	1.05	.94	.56
RSDI or pensions	.54	.47	.32	.69	.61	.36
SSI	.51	.44	.31	.80	.71	.42
Other income	.55	.47	.33	.71	.63	.37
<u>Whether have deductions</u>						
Shelter	.59	.51	.35	.73	.65	.38
Medical	.76	.66	.46	1.87	1.67	.99
Whether have net income	.61	.52	.36	.62	.55	.33
Whether have liquid resources	.44	.38	.26	.55	.49	.29
Food Stamp allotment amount (\$100's)	.54	.46	.32	.52	.46	.27

Table B-4 (Concluded)

	NPA Cases			PA Cases		
	All	Eligibles	Ineligibles	All	Eligibles	Ineligibles
<u>Case Characteristics</u>						
Certification characteristics						
Length of certification period (months)	.07	.06	.04	.06	.06	.03
Time from certification to QC review for initial certifications						
Certified same month or 1 month before review	.91	.79	.55	1.15	1.02	.61
Certified 2-3 months before review	.88	.76	.53	1.04	.93	.55
Certified 4-6 months before review	1.16	1.01	.70	1.27	1.13	.67
Certified 7 or more months before review	1.49	1.29	.90	1.69	1.50	.89
Time from recertification to QC review for ongoing cases						
Recertified same month or 1 month before review	--	--	--	--	--	--
Recertified 2-3 months before review	.69	.60	.42	.71	.63	.37
Recertified 4-6 months before review	.81	.70	.49	.79	.70	.42
Recertified more than 7 months before review	.91	.78	.54	1.01	.90	.53

Note: These are estimated standard errors of the impact estimates presented in Table IV-4.

Appendix C

Estimated Impacts of First and Subsequent Errors on Dollar Errors

Table C-1

ESTIMATED IMPACT OF FIRST AND SUBSEQUENT ERRORS ON OVERPAYMENT ERRORS BY SOURCE

Source of Error	NPA Cases			PA Cases		
	Estimated Amount of First Error	Estimated Amount of Subsequent Error	Percent of Errors of Specified Type that are First Errors	Estimated Amount of First Error	Estimated Amount of Subsequent Error	Percent of Errors of Specified Type that are First Errors
Earned income	54.21** (1.03)	15.42** (1.55)	75.0	70.82** (1.24)	10.98** (2.15)	78.3
Unearned income	35.24** (1.18)	4.42** (1.13)	53.8	40.52** (1.34)	2.79* (1.39)	56.7
Resources	64.73** (1.82)	7.24** (1.22)	38.1	89.41** (3.10)	4.21* (1.85)	33.7
Deductions	19.40** (1.60)	-1.45 (0.92)	28.4	20.50** (1.56)	-2.63* (1.18)	38.1
Household size	52.77** (2.23)	30.36** (3.52)	73.7	69.41** (1.86)	32.92** (3.16)	77.6
Other nonfinancial	85.64** (4.32)	1.02 (6.08)	66.7	86.48** (4.48)	16.64* (7.07)	72.3
Computations	37.36** (4.82)	7.61* (3.71)	38.4	42.30** (4.67)	2.23 (4.20)	46.7

*Significant at the 5% level.

**Significant at the 1% level.

Table C-2
ESTIMATED IMPACT OF FIRST AND SUBSEQUENT ERRORS ON TOTAL ERROR BY SOURCE OF ERROR

Source of Error	NPA Cases			PA Cases		
	Estimated Amount of First Error	Estimated Amount of Subsequent Error	Percent of Errors of Specified Type that are First Errors	Estimated Amount of First Error	Estimated Amount of Subsequent Error	Percent of Errors of Specified Type that are First Errors
Earned income	\$50.00** (0.81)	\$12.81** (1.25)	75.9%	\$63.63** (0.97)	\$9.80** (1.65)	74.4%
Unearned income	34.02** (0.96)	3.62** (0.92)	53.4	37.62** (1.04)	2.31* (1.06)	56.4
Resources	62.92** (1.61)	5.90** (0.97)	33.4	84.00** (2.64)	2.85 (1.46)	29.0
Deductions	18.33** (1.11)	-0.97 (0.73)	34.1	20.13** (1.00)	-2.63** (0.85)	44.6
Household size	51.27** (1.62)	29.83** (2.78)	77.2	62.60** (1.28)	34.03** (2.55)	82.6
Other nonfinancial	80.75** (3.79)	0.84 (4.76)	61.3	80.30** (3.79)	8.67 (5.26)	66.7
Computations	32.57** (3.38)	6.41* (2.91)	43.4	35.40** (3.07)	-1.22 (2.98)	49.9

*Significant at the 5% level.

**Significant at the 1% level.

Table C-3
IMPACT OF FIRST AND SUBSEQUENT ERRORS ON OVERPAYMENT ERROR BY CAUSE OF ERROR

Cause of Error	NPA Cases			PA Cases		
	Estimated Amount of First Error	Estimated Amount of Subsequent Error	Percent of Errors of Specified Type that are First Errors	Estimated Amount of First Error	Estimated Amount of Subsequent Error	Percent of Errors of Specified Type that are First Errors
Client-caused	\$49.86** (0.90)	\$9.64** (0.71)	54.9%	60.13** (1.07)	10.11** (1.00)	60.5
Information not reported	49.66** (1.07)	12.99** (1.10)	63.7	64.31** (1.24)	11.57** (1.34)	65.9
Information incompletely reported	50.05** (1.38)	7.32** (0.94)	44.4	51.54** (1.83)	8.45** (1.50)	51.0
Other client error	41.15** (6.69)	12.20 (6.48)	57.3	48.84** (8.48)	14.03 (8.75)	54.5
Agency-caused	35.09** (1.13)	1.51 (0.81)	46.3	37.58** (1.22)	5.92** (1.01)	53.3
Policy incorrectly applied	33.17** (1.87)	1.95 (1.34)	42.2	38.02** (2.14)	4.12* (1.77)	51.2
Failed to follow up on information provided	38.14** (1.48)	2.24 (1.23)	51.0	38.31** (1.52)	6.65** (1.44)	56.3
Arithmetic error	25.82** (3.25)	0.47 (2.39)	38.1	29.77** (4.17)	4.37 (3.28)	42.6
Other agency error	35.09** (4.75)	-8.41 (4.55)	50.4	37.33** (5.50)	12.53** (4.61)	46.8

*Significant at the 5% level.

**Significant at the 1% level.

Table C-4
IMPACT OF FIRST AND SUBSEQUENT ERRORS ON TOTAL ERROR BY CAUSE OF ERROR

Cause of Error	NPA Cases			PA Cases		
	Estimated Amount of First Error	Estimated Amount of Subsequent Error	Percent of Errors of Specified Type that are First Errors	Estimated Amount of First Error	Estimated Amount of Subsequent Error	Percent of Errors of Specified Type that are First Errors
Client-caused	\$46.45** (.72)	\$8.41** (.57)	54.9%	\$53.78** (.83)	\$9.07** (.78)	60.1%
Information not reported	46.76** (.84)	12.31** (.90)	64.8	57.02** (.96)	10.96** (1.05)	65.8
Information incompletely reported	45.61** (1.12)	5.85** (.74)	42.9	46.51** (1.44)	6.80** (1.16)	49.7
Other client error	38.20** (5.39)	10.08 (5.29)	56.6	40.48** (5.79)	13.74* (6.21)	59.4
Agency-caused	31.53** (.84)	1.99** (.64)	49.2	33.55** (.85)	4.75** (.75)	56.2
Policy incorrectly applied	29.51** (1.35)	2.11* (1.04)	46.1	33.11** (1.45)	3.49** (1.32)	54.9
Failed to follow up on information provided	35.09** (1.14)	2.85** (1.00)	53.1	35.00** (1.07)	5.06** (1.04)	58.4
Arithmetic error	23.47** (2.34)	.69 (1.89)	41.8	24.99** (2.69)	3.82 (2.43)	48.7
Other agency error	29.04** (3.37)	-5.56 (3.63)	56.1	33.31** (3.63)	10.54** (3.51)	55.3

*Significant at the 5% level.

**Significant at the 1% level.

Table C-5
ESTIMATED IMPACT OF FIRST AND SUBSEQUENT ERRORS ON OVERPAYMENT
ERRORS BY SOURCE AND CAUSE--NPA CASES

Source of Error	Client-Caused Error			Agency-Caused Error		
	Estimated Amount of First Error	Estimated Amount of Subsequent Error	Percent of Errors of Specified Type that are First Errors	Estimated Amount of First Error	Estimated Amount of Subsequent Error	Percent of Errors of Specified Type that are First Errors
Earned income	57.62** (1.17)	20.22** (2.23)	78.7	44.46** (1.82)	8.23** (2.76)	66.9
Unearned income	41.23** (1.55)	8.42** (1.69)	54.8	28.48** (1.64)	0.84 (1.71)	52.7
Resources	62.55** (1.89)	9.39** (1.58)	42.6	80.13** (5.44)	-1.40 (3.08)	19.5
Deductions	20.12** (2.16)	-1.50 (1.41)	28.9	19.06** (2.29)	-0.10 (1.40)	27.9
Household size	52.91** (2.63)	37.04** (4.45)	73.7	49.92** (3.94)	8.10 (7.41)	73.6
Other nonfinancial	79.14** (5.38)	-1.97 (8.63)	68.4	93.95** (7.0)	6.43 (10.57)	63.9
Computation	--	--	--	37.33** (4.78)	9.25* (3.60)	38.4

*Significant at the 5% level.

**Significant at the 1% level.

Table C-6

ESTIMATED IMPACT OF FIRST AND SUBSEQUENT ERRORS ON OVERPAYMENT
ERRORS BY SOURCE AND CAUSE--PA CASES

Source of Error	Client-Caused Error			Agency-Caused Error		
	Estimated Amount of First Error	Estimated Amount of Subsequent Error	Percent of Errors of Specified Type that are First Errors	Estimated Amount of First Error	Estimated Amount of Subsequent Error	Percent of Errors of Specified Type that are First Errors
Earned income	77.24** (1.42)	18.80** (3.00)	81.0	55.16** (2.10)	0.70 (3.61)	72.7
Unearned income	50.39** (1.87)	4.14 (2.32)	59.7	31.61** (1.78)	3.84 (1.91)	54.3
Resources	86.94** (3.21)	2.32 (2.36)	37.2	99.93** (9.10)	6.47 (5.09)	18.8
Deductions	21.32** (2.18)	-3.08 (1.79)	38.5	19.58** (2.13)	-1.32 (1.64)	37.7
Household size	74.98** (2.28)	37.09** (4.31)	78.2	57.78** (2.86)	26.86** (5.34)	76.5
Other nonfinancial	84.97** (5.79)	16.39 (9.67)	73.5	86.36** (6.78)	11.04 (11.13)	70.7
Computation	--	--	--	42.20** (4.60)	4.32 (4.15)	46.7

*Significant at the 5% level.

**Significant at the 1% level.

Table C-7
ESTIMATED IMPACT OF FIRST AND SUBSEQUENT ERRORS ON TOTAL ERROR
BY SOURCE AND CAUSE--NPA CASES

Source of Error	Client-Caused Error			Agency-Caused Error		
	Estimated Amount of First Error	Estimated Amount of Subsequent Error	Percent of Errors of Specified Type that are First Errors	Estimated Amount of First Error	Estimated Amount of Subsequent Error	Percent of Errors of Specified Type that are First Errors
Earned income	54.10** (0.94)	18.63** (1.83)	79.2	40.38** (1.35)	5.53** (2.12)	69.2
Unearned income	40.41** (1.29)	6.69** (1.40)	53.7	27.33** (1.31)	0.92 (1.39)	53.2
Resources	60.65** (1.67)	7.93** (1.27)	38.0	79.54** (4.87)	-1.56 (2.42)	15.9
Deductions	19.63** (1.55)	-1.61 (1.11)	32.9	17.30** (1.51)	0.73 (1.10)	35.3
Household size	51.11** (1.90)	33.99** (3.57)	77.4	49.91** (2.83)	14.75* (5.74)	76.7
Other nonfinancial	73.05** (4.66)	2.00 (6.66)	63.2	93.31** (6.30)	-1.31 (8.45)	58.0
Computation	--	--	--	32.71** (3.34)	7.94** (2.90)	43.5

*Significant at the 5% level.

**Significant at the 1% level.

Table C-8
ESTIMATED IMPACT OF FIRST AND SUBSEQUENT ERRORS ON TOTAL ERROR
BY SOURCE AND CAUSE--PA CASES

Source of Error	Client-Caused Error			Agency-Caused Error		
	Estimated Amount of First Error	Estimated Amount of Subsequent Error	Percent of Errors of Specified Type that are First Errors	Estimated Amount of First Error	Estimated Amount of Subsequent Error	Percent of Errors of Specified Type that are First Errors
Earned income	70.82** (1.15)	16.26** (2.35)	80.0	49.72** (1.55)	1.95 (2.69)	73.1
Unearned income	47.88** (1.55)	5.11** (1.86)	57.9	30.35** (1.31)	2.03 (1.42)	55.3
Resources	82.39** (2.74)	1.33 (1.84)	32.5	88.51** (7.52)	2.60 (3.76)	15.7
Deductions	20.62** (1.51)	-3.03 (1.33)	42.2	19.77** (1.28)	-1.34 (1.15)	46.4
Household size	66.08** (1.59)	37.04** (3.48)	82.6	55.90** (1.92)	27.38** (4.34)	82.8
Other nonfinancial	77.43** (4.84)	10.54 (7.52)	69.7	82.66** (5.86)	3.20 (8.10)	62.5
Computation	--	--	--	35.39** (3.03)	0.08 (2.95)	49.9

*Significant at the 5% level.

**Significant at the 1% level.

Table C-9
IMPACT OF FIRST AND SUBSEQUENT ERRORS ON OVERPAYMENT ERROR BY TIMING OF ERROR

Timing of Error	NPA Cases			PA Cases		
	Estimated Amount of First Error	Estimated Amount of Subsequent Error	Percent of Errors of Specified Type that are First Errors	Estimated Amount of First Error	Estimated Amount of Subsequent Error	Percent of Errors of Specified Type that are First Errors
At or before most recent certification	\$45.24** (.93)	\$5.27** (.60)	46.3%	\$48.75** (1.11)	\$8.03** (.88)	54.0%
After most recent certification	43.27** (1.11)	9.97** (1.15)	63.6	53.98** (1.26)	8.03** (1.22)	63.1%

**Significant at the 1% level.

Table C-10

IMPACT OF FIRST AND SUBSEQUENT ERRORS ON TOTAL ERROR BY TIMING OF ERROR

<u>Timing of Error</u>	<u>NPA Cases</u>			<u>PA Cases</u>		
	<u>Estimated Amount of First Error</u>	<u>Estimated Amount of Subsequent Error</u>	<u>Percent of Errors of Specified Type that are First Errors</u>	<u>Estimated Amount of First Error</u>	<u>Estimated Amount of Subsequent Error</u>	<u>Percent of Errors of Specified Type that are First Errors</u>
At or before most recent recertification	\$39.63** (.73)	\$4.82** (.48)	47.2%	\$41.85** (.82)	\$7.47** (.67)	55.1%
After most recent certification	41.56** (.86)	9.56** (.92)	64.6	46.82** (.93)	6.28** (.91)	63.4%

**Significant at the 1% level.